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THE EFFECTS OF THE HIGH COST OF NATURAL GAS ON SMALL BUSINESSES AND FUTURE ENERGY TECHNOLOGIES

HEARING

BEFORE THE

SUBCOMMITTEE ON TAX, FINANCE AND EXPORTS

OF THE

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HOUSE OF REPRESENTATIVES

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Wednesday, June 28, 2006

HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON TAX, FINANCE, AND EXPORTS
COMMITTEE ON SMALL BUSINESS
Washington, DC

The Subcommittee met, pursuant to call, at 2:00 p.m., in Room 2360 Rayburn House Office Building, Hon. Jeb Bradley [Chairman of the Subcommittee] presiding.

Present: Representatives Bradley, Kelly, Chabot and Millender-McDonald.

Chairman BRADLEY. Good Afternoon. Welcome to the hearing we are going to have this afternoon. I welcome you to the Tax, Finance, and Export Subcommittee of the House Committee on Small Business. I am pleased to be working closely with my colleagues as we review the effects of the high cost of natural gas on small businesses and future energy technologies.

I look forward to hearing about the insight that all of you on both of our panels can provide both an industry and a policy viewpoint. With that said, I would like to thank our distinguished witnesses for taking the time to come to Washington and be with us today.

At the very core of a strong economy in our country is the availability of reasonably priced sources of energy. It is our responsibility as Members of Congress to ensure that government is not interfering with the development and deployment of these energy sources and ensure that these resources are being extracted in an environmentally responsible manner. Our strategies must enable the development and expansion of ideas and the success of entrepreneurs, both domestically and internationally.

Currently, our small businesses are suffering from the high cost of natural gas which over the last year has risen to prices as high as $15 per million BTUs. To date, the average customer is paying more than twice as much as they did in 1999, and with demand predicted to increase by roughly 37 percent over the next 15 years, there is little relief in sight.

These high prices are not only affecting businesses and consumers, but they are also hampering the technological advancements of our alternative fuel goals; specifically hydrogen. Natural gas and electricity are the primary energy sources for obtaining hy-

drogen. How can we realistically expect to advance the objectives of our alternative fuels strategies when we are providing one of the greatest obstacles ourselves through our energy policies?

In my view, we need to increase our nation's natural gas supplies either through increased domestic production or greater importation of international supplies, and above all develop more energy efficient technologies.

I am looking forward to hearing the testimony from our witnesses here today and I look forward to their thoughts on this very important topic. However, before we do so, let me take the opportunity to recognize the ranking member of this Committee for her opening statement, Mrs. Millender-McDonald.Thank you.

[Chairman Bradley's opening statement may be found in the appendix.]

Ms. MILLENDER-MCDONALD. Thank you so much, Mr. Chairman, and thank you for convening this hearing. I would like to also thank all of our witnesses who are here today, one of whom is a business person in my district, Mr. Richard Goodstein so it is good to see all of you here.

There is no question that energy costs have been climbing at steady and often shocking rates lately. Natural gas resources have the highest amount of volatility in price to date. Small businesses are heavy users of energy resources and it is no surprise to all of you here that the rising energy costs are having a profound and dramatic impact on our nation's entrepreneurs. Today's hearing will give us a chance to look at how small businesses are impacted by the current energy trends.

Increasing demand, limited supplies, government deregulation and weather conditions have all contributed to the hike in energy prices. In fact, over the last 5 years, the cost of natural gas has jumped by 90 percent. The rising cost of energy is currently one of the top concerns among small business entrepreneurs.

Small businesses often rely on energy resources for transportation and operational needs on a daily basis. The tight budget that many entrepreneurs work with leaves little flexibility to absorb energy price hikes. Farmers alone paid an extra $6 billion in energy related expenses in both the 2003 and 2004 growing seasons with no relief projected in the future.

It is clear then that the impact of the rising energy prices is having a great effect on small businesses. Energy related costs have resulted in the loss of 3 million manufacturing jobs since 1999 and the plastics industry has lost over $14.5 billion in business between 2000 and 2005 due to the high cost of natural gas. These trends have completely deflated small business owner's expectations for expansion and two-thirds of business owners are anticipating even lower profits in the future.

Unfortunately, there is no easy way for small businesses to deal with these rising costs. Entrepreneurs seem to have very few choices; they can either increase the price of their goods or reduce services and restrict investments. My hope is that today's hearing will provide us the opportunity to discuss some of these challenges.

Small businesses, as we all know, are the engine of our economy and deserve support and a fair chance to succeed. Natural gas price surges have created a severe disruption in the operation of small

businesses and are impeding their ability to be viable and competitive in today's market place. With small firms being the nation's single largest employer, we need to do everything we can to make sure that they are able to thrive and be successful.

I have the rest of this and I am not going to read it all. I have a long-winded staff and so they have provided me with a dissipation he wants me to complete. But I thank you all for being here. Mr. Chairman, we know that it is unacceptable for our nation's entrepreneurs to be in these types of challenging times and they deserve every effort to provide and we deserve to hear from them so that we can provide every effort to provide them with the tools that they need and I look forward to the witnesses' testimony. Thank you so much, Mr. Chairman.

Chairman BRADLEY. Great. Thank you very much. Let me welcome the three panelists. First, Mr. James Kendell. He joins us from the U.S. Energy Information Administration where he serves as Director of the Natural Gas Division of the Office of Oil and Gas. He currently manages weekly, monthly, and annual natural gas data collections for the U.S. Government as well as short-term natural gas analysis and contributions to EIA Short-Term Energy outlook. Mr. Kendell, welcome.

Our next witness is Mr. Walter Cruickshank. He is the Deputy Director of Minerals Management Service of the U.S. Department of the Interior. In his present capacity Mr. Cruickshank assists the MMS Director in the administration of programs to ensure the effective management of mineral resources located on the nation's Outer Continental Shelf including the environmentally safe exploration, development, and production of oil and natural gas and the collection and distribution of revenues from minerals developed on federal and Indian lands. Mr. Cruickshank, thank you also for being here.

Lastly, on the first panel joining us is Mr. Tom Lonnie. He is from the U.S. Department of Interior. Mr. Lonnie serves the Bureau of Land Management's Assistant Director for Minerals, Realty and Resource Protection. In that position which he has held since July of 2003 Mr. Lonnie oversees the BLM's management of numerous key activities on public lands including the development of fluid minerals such as oil and gas and solid minerals such as gold, silver, copper, and coal. Mr. Lonnie, thank you for being here.

We will start with you, Mr. Kendell. I would just remind all of you to try to keep your prepared remarks to five minutes and there will be more opportunity for questions. Thank you.

STATEMENT OF JAMES KENDELL, NATURAL GAS DIVISION, ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Mr. KENDELL. Mr. Chairman and Members of the Committee, I appreciate the opportunity to appear before you today. The Energy Information Administration is an independent, analytical, and statistical agency within the U.S. Department of Energy. We are charged with providing objective, timely, and relevant data, analyses, and projections for the use of Congress, the Administration, and the public.

Although we do not take positions on policy issues, our work often assists policy makers in their deliberations. Because we have an element of statutory independence, our views are strictly those of the EIA and should not be represented as those of the Department or the Administration.

Much of my testimony today is based on our weekly, monthly, and annual statistics, as well as the June 2006 Short-Term Energy Outlook. Before turning to the outlook through 2007 I will briefly review the major forces affecting current natural prices.

High prices continue to dominate natural gas markets, although current wellhead prices are below the 2005 record levels. Factors contributing to these historically high price levels include record high crude prices, increased demand for natural-gas-fired electric power plants, depletion of natural gas resources, and major supply disruptions as a result of Hurricanes Katrina and Rita last summer.

Despite the high prices, residential and commercial gas consumers used about the same amount of natural gas in 2005 as in 2004. Industrial consumption declined by about 8 percent but that was nearly offset by a 6 percent increase in natural gas use by electric power generators.

Looking at the four factors affecting natural gas prices, first the most recent increase in crude oil prices began in 2004 when they almost doubled from 2003 levels. Crude prices averaged more than $56 a barrel in 2005 and roughly $66 a barrel for the first 5 months of 2006. So far in June we have seen prices hover around $70 a barrel.

Second, natural-gas-fired electric power generation increased more than 70 percent between 1993 and 2004. This new gas-fired generating capacity reflects attractive environmental performance, siting ease, high efficiencies, relatively low capital costs, and relatively low natural gas prices of the 1990s when many of these plants were planned.

Third, despite record drilling for natural gas, production has failed to increase proportionately. A key question facing producers is whether natural gas resources in the mature on-shore lower-48 States have been exploited to a point at which more rapid depletion rates eliminate the possibility of increasing, or even maintaining, current production levels at a reasonable cost.

Fourth, the hurricane related shut-ins contributed to declining production as the paths of five major hurricanes passed through the Gulf of Mexico significantly disrupting natural gas production, some of which continues today.

According to EIA's Short-Term Energy Outlook released on June 6, natural gas prices are projected to be lower through the rest of the year relative to the corresponding 2005 levels. The expected average for 2006 for Henry Hub spot prices of $7.74 per mcf is down by $1.12 from last year's average.

Commercial natural gas prices, however, are expected to be higher than the average commercial price of $11.58 in 2005. Recovery in natural-gas-fired intensive industrial output following the 2005 hurricanes is likely to contribute to the growth in natural gas consumption this year and next. Domestic dry natural gas production is projected to increase slightly in 2006 and 2007.

Total net liquified natural gas imports are expected to increase more from the 2005 level of 631 bcf to 710 in 2006 and 950 bcf in 2007.

Mr. Chairman, Members of the Committee, this completes my testimony. I would be happy to answer any questions that you might have.

[Mr. Kendell's testimony may be found in the appendix.]

STATEMENT OF WALTER CRUICKSHANK, MINERALS MANAGEMENT SERVICE, U.S. DEPARTMENT OF THE INTERIOR

Mr. CRUICKSHANK. Thank you, Mr. Chairman and Members of the Subcommittee. I appreciate the opportunity to appear here today to discuss the role of the Department of the Interior in meeting America's demand for natural gas.

As you noted in your opening statements, high natural gas prices caused by tight domestic supplies not only hurt consumers but also mean losses for agricultural, manufacturing, and many other businesses both large and small.

The Department of the Interior manages the resources that provide a third of our nation's energy from traditional sources such as oil, natural gas and coal, to renewable sources such as geothermal and wind. Within the Department several agencies play a significant role in helping America meet its natural gas needs: The Minerals Management Service, the Bureau of Land Management, the U.S. Geological Survey, and the Assistant Secretary for Indian Affairs.

I will address the roles of MMS and the Geological Survey and Mr. Lonnie will then discuss his programs.

Minerals Management Service is responsible for managing the energy and mineral resources on the Outer Continental Shelf, or OCS, which refers to the offshore areas beyond state waters. We have a focused and well-established mandate to balance the benefits derived from the exploration and development of energy and mineral resources with environmental protection and safety.

The OCS is a major supplier of oil and natural gas for domestic markets and contributes more natural gas than any state other than Texas. Natural gas production from the OCS exceeds 10 billion cubic feet a day, or about 21 percent of our domestic natural gas production. These production levels were effected by hurricanes Katrina and Rita last year. Since the onset of Katrina through last week over 800 billion cubic feet of natural gas production was shut in, or about 22 percent of the annual production from the Gulf of Mexico. As of last week about 9 percent of daily natural gas production remained shut in in the Gulf of Mexico.

Nevertheless, within the next five years we expect offshore production of natural gas will continue to grow to more than 23 percent of domestic production. A vast majority of this new production will come from deep water areas of the Gulf of Mexico and from deep wells drilled beneath the shallow waters of the Gulf.

In recent years the strongest trend on the OCS has been the growth in deep water production. By deep water we are talking about water depths of 1,000 feet or more, almost twice the height of the Washington Monument. In fact, industry is now drilling in water depths of over 10,000 feet, or about two miles.

Deep water activity in the Gulf has been a major success story with over 90 projects having come online. Natural gas production from deep water has grown to about 3.7 billion cubic feet per day, an increase of well over 600 percent over the last 10 years. We expect it will be several more years before deep water areas have reached their full potential.

Another 10 percent of gas production in the Gulf comes from deep wells drilled more than 15,000 feet below the sea bed in shallow waters of the Gulf. We began encouraging exploration of these deep horizons in 2001 and there were about 15 new deep gas discoveries announced over the last two years.

We expect OCS natural gas production will continue to grow in the future because of the amount of estimated undiscovered resources remaining there. Earlier this year we released our estimates of undiscovered recoverable natural gas resources underlying the OCS. The estimate is for 420 trillion cubic feet of gas. To put that in perspective, compare it to domestic production from all sources last year of less than 20 trillion cubic feet.

Access to these resources is achieved through the five-year OCS oil and gas leasing program.

The OCS Lands Act requires the Secretary of the Interior to prepare and maintain a schedule of proposed oil and gas lease sales for the nation. Our goal is to develop a program that is responsive to the nation's energy needs, protects the human, marine, and coastal environments, and addresses public concerns.

We are currently in the middle of a two-year process of developing the program for 2007 to 2012. Our next step will be to release a proposed program and draft EIS this summer with a proposed final program and final EIS being delivered to Congress in the first quarter of 2007.

I would briefly like to address the vital role of the United States Geological Survey in assessing and evaluating the nation's energy resources. The Geological Survey provides impartial scientific information regarding our geologically based energy resources such as oil, gas, coal, and geothermal.

In its recent national assessment of undiscovered oil and gas resources onshore and beneath state waters, the survey estimated over 600 trillion cubic feet of technically recoverable natural gas. This gas is not the only potential resource out there; for the longer term, the Survey is looking at something called methane hydrates which are ice-like solids in which water molecules have trapped natural gas molecules.

The Survey estimates that the in-place resources domestically of these hydrates amount to 200,000 to 300,000 trillion cubic feet, a number that is obviously substantially larger than the 1,000 trillion cubic feet of conventional natural gas resources believed to exist in this country.

Hydrates are a major resource priority for the Geological Survey. They are a member of a multi-agency task force that is working with states and industry to conduct state-of-the-art research to increase our understanding of these resources, their potential, their recoverability, and production characteristics, and various other issues associated with bringing them to market.

Mr. Chairman, this concludes my remarks and I would be happy to answer any questions you may have.

Chairman BRADLEY. Thank you.

Mr. Lonnie.

[Mr. Cruickshank's testimony may be found in the appendix.]

STATEMENT OF TOM LONNIE, BUREAU OF LAND MANAGEMENT, MINERALS, REALTY AND RESOURCE PROTECTION DIRECTORATE, U.S. DEPARTMENT OF THE INTERIOR

Mr. LONNIE. Thank you for the opportunity to speak to you today about the BLM's oil and gas management program. I would like to highlight some of the important points about the BLM's energy and minerals programs.

Demand for energy in this country has outstripped domestic energy production and we must find ways to reduce our energy consumption and increase our energy efficiency and domestic energy production. Under the Mineral Leasing Act the BLM is responsible for managing oil and gas leasing on approximately 700 million acres of BLM and other federal lands, as well as private lands where the mineral rights have been retained by the Federal Government.

The BLM works to ensure the development of mineral resources is in the best interest of the nation. The BLM's oil and gas management program is one of the major mineral leasing programs in the Federal Government. The BLM administers over 45,000 oil and gas leases of which 23,000 are currently producing. Domestic production from the 74,000 federal and Indian on-shore oil and gas wells accounts for 18 percent of the nation's natural gas and five percent of the nation's oil with sales values exceeding 19.6 billion in fiscal year 2005.

The BLM manages the federal lands that are available for leasing and administers the leases. In 2003 we released the Energy Policy and Conservation Act Report, also known as EPCA. This study by the BLM, USGS, Department of Energy, and the U.S. Forest Service was done at the request of Congress. EPCA identified five basins in Montana, Wyoming, Utah, Colorado, and New Mexico as containing the largest on-shore resource of natural gas in the country and the second largest resource after the outer continental shelf.

These on-shore basins contain an estimated 140 trillion cubic feet, enough to heat 55 million homes for almost 30 years. More than half of these lands are under federal management. EPCA shows us that approximately 36 percent of the federal land is not available for leasing and 64 percent is available for leasing with some restrictions associated with oil and gas operations.

Domestic production of natural gas on-shore has been increasing over the last three years. In Fiscal Year 2003 2.4 trillion cubic feet of natural gas were produced from Federal lands. In Fiscal Years 2004 and 2005 2.8 trillion cubic feet and 2.9 trillion cubic feet respectively were produced.

In addition to the Federal on-shore leases, the BLM supervises the operational responsibilities for 3,700 producing Indian oil and gas leases. In FY 2005 322 million cubic feet of natural gas were produced from American Indian lands. The demand for on-shore oil

and gas is reflected in the dramatic increase in the number of applications for permits to drill, also called APDs. The number of APDs received by the BLM has increased every year since 2002 and we anticipate this trend to continue through 2007 and beyond.

The BLM received 8,351 APDs in 2005, up from 4,585 APDs in 2002. Our current projection is that we will receive over 9,700 in 2006 and over 10,500 in 2007. We are proud of our progress that we have made in response to this increasing demand. In 2005 we processed 7,736 APDs, a record number.

The Energy Policy Act of 2005 is a comprehensive piece of energy legislation addressing conservation, energy supply from oil, gas, coal, oil shale, and renewal sources, distribution of energy, and research into future forms of energy. The BLM is playing a role in each of these areas. The Energy Policy Act of 2005 contains several provisions through which the BLM is working to improve the APD permit processing, expedite oil and gas leasing, and ensure national gas production on public lands in an environmentally-responsible manner.

BLM is working with other regulating agencies to develop a one-stop permitting process for oil and gas activities. The objective of grouping the appropriate agency personnel is to create a more efficient and effective process for issuing permits for oil and gas.

In closing, as our nation's energy needs continue to increase, the BLM is positioned to do its part in helping to meet this need. That concludes my comments. Thank you for the opportunity to speak and I would be happy to respond to any questions.

[Mr. Lonnie's testimony may be found in the appendix.]

Chairman BRADLEY. Thank you all very much. We are joined by Sue Kelly from New York.

Sue, do you have an opening statement? Sorry to hit you up before you even sit down but wanted to give you an opportunity. Great.

Let me start out with questions first of Mr. Kendell. NOAA is predicting a fairly active hurricane season again this year. Perhaps not quite as catastrophic as last year. We will find out. You indicated about nine percent of the natural gas is still shut in in the Gulf. What kind of projections do you have for what might happen in a relatively active hurricane year as to what might be shut in? And then how would you think that would affect prices?

Mr. KENDELL. Of course, predicting the location and intensity of hurricanes is always difficult but in our latest Short-Term Energy outlook, we looked at the latest national Oceanic and Atmospheric Administration forecast which came out May 22nd. We looked at all the major hurricanes since 1960 and how much oil and gas was actually shut in. Then given the level of their prediction, our estimate is that somewhere between zero and 203 bcf would be shut in or lost to production this hurricane season. That is, of course, less than a quarter of what we lost for Rita and Katrina.

We have not directly estimated the price impact of that outer level of loss of 203 bcf. There is one major consulting firm that has taken our number and they estimate that the loss of 203 bcf would mean a price increase at the wellhead of about $3.70 but that is not EIA work. That is just derived from our work.

Chairman BRADLEY. Again, to Mr. Kendell, with the relatively high levels of gas in storage now, can you hazard as to why prices haven't dropped off more?

Mr. KENDELL. I think the first point is that we have seen prices drop off quite a bit. You in your opening statement mentioned that we were at $15 at the wellhead in December and now we are down to about $6. I think if you look at our long-term energy outlook, which I used to work on, we do expect prices to come down to, say, $4.40 or $4.50 over the next 10 years or so but we don't expect prices to ever reach the historic 1990 levels of $2 or $3. I covered in my testimony some of the factors.

In the short-term people are worried about weather. They are worried about what if we have some hurricanes, what if we have some hot weather, are we going to have enough gas. In the longer term people are worried about the difficulty of supply. I talked about depletion effects. People are worried about a surge in demand and the competition between oil and gas. What if commercial and industrial consumers start demanding more and will there be more gas in the long-term?

Chairman BRADLEY. Sort of an open question for any of you if you would like to comment on it. Given the rise of combined cycle electricity, which I think all of you touched on as impacting demand significantly, in particular my area of the country in the northeast there hasn't been a single generating facility built in the last 10 years that I am aware of, at least that is a significant base load plan that isn't natural-gas-fired. How do you see that going into the future affecting the longer-term trends?

Mr. KENDELL. It certainly is going to put some pressure and continue to put pressure on natural gas prices. The good thing about combined- cycle plants is that they are much more efficient than the natural gas boilers that we used to have in place 30 years ago. Because of the two cycles they are more efficient than turbines. I think the electric industry is trying to use the natural gas in the most prudent way possible. It does mean that they are really tied to natural gas. Many of the plants that used to be dual fueled are no longer, as I mentioned. That could create some difficulties.

Mr. CRUICKSHANK. Mr. Chairman, I would just add with respect to your part of the country in particular, one of the things we are doing at the Department of Interior is trying to encourage the growth of renewable energy. Last year MMS received authority to develop a program for offshore renewable energy, wind and wave and other sorts of energy.While that is unlikely to make a big difference in supply in the near-term, over time if those facilities are built, they can reduce the pressure on demand for natural gas to generate electricity.

Chairman BRADLEY. See my time is up, I would just indicate what a controversial item the offshore wind facility has been in the Nantucket area. I'm glad to see that the Coast Guard reauthorization did not automatically nix that. It has large potential and, at least in my view, it ought to be permitted based on scientific data and the impact on navigation and really not political and not aesthetics.

With that, I am happy to recognize Ms. Millender-McDonald.

Ms. MILLENDER-MCDONALD. Thank you so much, Mr. Chairman. This is a very interesting topic. In fact, we have been speaking on this for quite sometime and in the statement that Mr. Kendell has presented to us today, he speaks about the world oil prices and we know that the crude oil is really up and down, up and down. The most recent increase in crude oil prices began in 2004, as you have indicated, Mr. Kendell.

In my opening statement I did mention that natural gas resources have the highest amount of volatility in price to date. With all of this going and according to the Energy Information Administration, natural gas prices are projected to rise by over 6 percent between 2006 and 2007. Do you expect this trend, if you can give this type of projection, to continue in the future and will prices remain stable or become more volatile?

Mr. KENDELL. In addition to having a Short-Term Energy outlook, which I testified about today, we also do an Annual Energy Outlook. What this shows is that we expect that actually prices will decline a little bit through the year 2016 and then to hit about $4.50 in 2016, and then gradually go up to around $5.40 by 2030. Of course, this is kind of a steady-state forecast and it doesn't include a lot of these volatility events that people are so concerned about.

Ms. MILLENDER-MCDONALD. So 2016 we will see kind of like a steady stable flow. Is that what I'm hearing here? About 2016 it will kind of stabilize itself?

Mr. KENDELL. In constant dollars. I was just reminded that this forecast is in 2004 dollars.

Ms. MILLENDER-MCDONALD. Okay. All right.

Mr. KENDELL. We expect actually over the long-term and that's because the current high prices are bringing on a substantial amount of drilling. We are getting new LNG terminals built. We expect LNG to be coming in. In this forecast we expect the Alaskan natural gas pipeline to start moving gas in 2015. All those things put downward pressure on natural gas prices in the long-term.

Ms. MILLENDER-MCDONALD. Of course, Long Beach is one that has been tapped for LNG but it is quite a volatile circumstance, I suppose, at this time. In fact, the city council is really very uncertain about that at this point. I want to go back to Mr. Cruickshank. The National Energy Policy the President has indicated includes directives to versify and increase energy supplies. He encourages conservation, of course, and ensure adequate energy distribution.

When he speaks about directives to versify and increase energy supplies, I am reminded of the Interior Department manages the resources that provide a third of our nation's energy. Given that, these resources include fossil fuel such as coal, oil, and natural gas, as well as renewable resources and geothermal steam and wind.

I put an amendment in to the Energy Bill to talk about geothermal because that is one source of energy that California can resurrect quickly to help us to become more independent than dependent. I wanted to get your thoughts on given that the President is suggesting that we diversify because of natural gas and where it is volatile at this point, what are your thoughts on these other resources that I have just outlined?

Mr. CRUICKSHANK. I will speak a bit but a lot of those resources are on-shore and under BLM's jurisdiction.

Ms. MILLENDER-MCDONALD. That is correct.

Mr. CRUICKSHANK. The Department of the Interior as a whole is very supportive of increasing renewable energy production from federal lands and is taking steps both onshore and offshore to create the conditions where renewable energy can be developed. That said, even if they grow rapidly it will be quite some time before they make a substantial contribution to the nation's energy supply. We are going to remain dependent on fossil fuels for quite a long time to come, even as we develop renewable energy.

Ms. MILLENDER-MCDONALD. Far beyond what natural gas can bring in, the stability of that about 2016?

Mr. CRUICKSHANK. Most of what I have heard is for at least the next 20 years we will still be dependent on traditional sources of fuel.

Ms. MILLENDER-MCDONALD. Is that right?

Mr. CRUICKSHANK. Even though renewable energy will account for a growing share of our production.

Ms. MILLENDER-MCDONALD. Right. Geothermal. What are your thoughts on that? Or if Mr. Lonnie wants to answer that.

Mr. LONNIE. I think I mentioned as part of the Energy Policy Act that was passed last August we, the BLM, and the Minerals Management Service, are currently rewriting our regulations to somewhat simplify the leasing process and the accounting process associated with geothermal.

We have numerous leases pending on-shore in Nevada, California, and also in Oregon and Washington. We view that as an important energy source in terms of diversity. In addition, there were several other provisions of the Act that we had already started embarking upon such as oil shale. Oil shale in the west, and this is primarily in Utah, Wyoming, and Colorado, estimated that there are about 800 million barrels of oil technically recoverable. We have started the research and development program on that and we currently are in the process of reviewing six or seven nominations for RD&D projects.

Shell Oil believes based on testimony that I have heard they think they can have a commercial production by the next decade. Other projects we have got, we have got numerous wind projects on-shore in Idaho, Wyoming, and also in Montana that we are currently processing which would amount to small size coal power plants upon approval. We also have existing wind projects that are producing energy in California and others.

We developed a solar energy policy that is in existence if companies want to come in and place solar panels beyond land in certain areas. We have developed through contracting what the best areas for wind energy as well as solar energy are in the western United States. In addition, the BLM leases coal and the coal leased by the BLM accounts for probably 50 percent of the electricity generated in the west.

Ms. MILLENDER-MCDONALD. Mr. Chairman, may I just ask one quick question here? Gentlemen, you have all outlined where we are going with renewable energy or resources or sources along with all of the other fossil fuel, natural gas. You can see how this im-

pacts your small business entrepreneurs. How soon can we expect any relief for them to continue to do their due diligence given all the volatility of where we are and where we plan to go and the years it seems that it will take before we come to come to some type of level of stability? Good question? Confused questions?

Mr. KENDELL. Good question. This year we expect prices to be less than the comparable time last year, assuming we don't have a hurricane, and assuming we don't have a terrible hot spell. I don't know that we are ever going to get to a position from now on where natural gas prices are stable the way they were in 1920 or the way they even were in the '90s.

Ms. MILLENDER-MCDONALD. Not until about 2016 and then that is also something that is not predictable.

Mr. KENDELL. Sure. What I said was that our long-term forecast shows them just falling off very slightly by 2016 and then start rising to about almost $6.00 in constant dollars by 2030. We don't expect the prices to necessarily be stable from month to month or even year to year. I mean, these long-term forecasts take out a lot of that volatility. Natural gas has become a commodity and it is no longer as heavily regulated as it was in the '40s and '50s so we are going to see volatility.

Ms. MILLENDER-MCDONALD. Unfortunately. Anymore comments? No? Thank you so much, Mr. Chairman.

Chairman BRADLEY. Congresswoman Kelly.

Ms. KELLY. Thank you, Mr. Chairman.

Mr. Kendell, I represent New York's Hudson Valley. There are a lot of small businesses there and they are in the agriculture industry. They produce fresh fruits, vegetables, dairy commodities, as well as nurseries. Michael Sweeten is a small business owner in my district and he is also the town supervisor in the town of Warwick, New York. He has heard frequently from other business owners that he is not the only one feeling the pinch.

Mr. Sweeten has operated a green house and nursery operation for more than 30 years and this is the worst time he has had in his whole career because of the rising energy cost. He wrote me in December of 2005 explaining the problem with energy cost for small businesses. In 2004 he paid about 73.5 cents per 100 cubic feet. That jumped to 105 per ccf for a few months. Then it settled down to 85 percent per ccf through August of 2005.

In August of 2005 it jumped to $1.11 per ccf. In September it rose to $1.57 per ccf. In October it hit $1.78 per ccf. That is an increase of 60 percent in two months. Compared to the fall of 2004 his cost of gas has risen 109 percent. It took your agency three months until March 2006 to reply to my inquiries regarding this spike in prices.

Once the Department of Energy did reply, the agency blamed it on the infrastructure lost in last summer's hurricanes and said there was an increase in demand. I understand that but before the two worst hurricanes, the price had already jumped more than 25 cents. For a constituent in a small business that paid $7,000 more in the spring of 2006 than the same period for the spring in 2005 and he is using less natural gas, the simple supply and demand argument really doesn't cut it.

The Assistant Secretary said in a response finally that we got that there had been no change in demand, but that is not what the small businesses of this constituent have been telling me. They are saying that they are doing everything possible to use less simply because the cost is so high. Even if the costs tend to go down as you stated in your testimony, and in your testimony here you state on page 7, "Natural gas prices trended downward between mid-December 2005 and early March 2006."

Then you also further state, "This past winter was relatively mild resulting in unusually high storage inventories." Why is my constituent paying $7,000 more in the spring of 2006 then he was paying in 2005? Can you explain what you are trying to do here and can you explain at least to help me explain to the small businesses I represent about these enormous spikes in prices?

Mr. KENDELL. I'm sorry that DOE didn't get back to you in a more timely fashion. Next time send it to EIA and we will get back to you more quickly. Greenhouses in particular are significantly affected by the natural gas prices and it is very difficult for companies that rely on one fuel such as natural gas to respond to events like the hurricanes. I mean, the hurricane aftermath was really at the root of these enormous price increases that he saw.

Ms. KELLY. But this had already gone up 25 cents before the hurricanes.

Mr. KENDELL. Right.

Ms. KELLY. It was rising before the hurricanes. Why?

Mr. KENDELL. That is one of the reasons why prices continue to be high now. People are anticipating that there might be hurricanes. They are anticipating that there might be warm weather. If you look at the prices that are being paid in the future's market for next winter, the prices are about $4.00 in excess of what they are now. What that does is give people an incentive to put natural gas in storage. There is an incentive to buy gas, to put it in storage, and it puts demand pressure on the price and keeps it up.

Ms. KELLY. So you are saying to me, if I understand you correctly, that in your testimony you are talking about a downward trend in prices for early 2006. Small business owners are not seeing this. Then you are saying that your data are showing that people are storehousing this. If they are storehousing gas, are you saying that they are prepared to put in high reserve inventories and they are holding those inventories in case we might have a hurricane? In case they can then drive up the price? How is that allowable?

You talk about market forces. If these people are increasing their inventories, how about all these small businesses out there and the people are trying to heat their homes who need that gas at a lower price now? What you are saying to me is you have a distorted market force that is at work here.

Mr. KENDELL. As I said to the Chairman, the prices have come down significantly. We had prices of about 15 dollars in December and now they are down to six.

Ms. KELLY. That is wonderful but how about my guy who is paying $7,000 more this year than he did last year for the same era that you are saying the prices are down?

Mr. KENDELL. Right. Well, it is sort of like being on the scale. I get on the scale and it says 200 pounds and then the next month is says 180, I think it is great.

Ms. KELLY. What does that have to do with oil prices?

Mr. KENDELL. We have had a change in expectations. People in the past were used to seeing prices of $3.00 per 1,000 cubic feet. Now we have had a whole series of changes in the market. In my testimony I talked about depletion. I talked about the effects of the hurricanes.

Ms. KELLY. Wait a minute. You have just contradicted yourself, sir. You just told me that people were adding to their inventories and holding it and now you are talking about depletion.

Mr. KENDELL. I am talking about depletion in production. I am not talking about inventory. I am talking about production.

Ms. KELLY. Depletion of production.

Mr. KENDELL. Depletion of gas resources.

Ms. KELLY. But people are stockpiling gas reserves in their inventories now.

Mr. KENDELL. That is further downstream. Once the gas is produced, it is put into pipelines and it is put into storage facilities. What the gas industry does over the summer is stores natural gas so that people have it during the winter when most people in the north need it.

Ms. KELLY. I understand that. You still haven't answered—I have asked you several questions and I really don't feel you have answered them. I want to go back to the fact that it sounds to me when you say that the reserve inventories are high right now so I don't understand when you say that they are high now. We had production, didn't we, to produce that?

Mr. KENDELL. Yes, we did.

Ms. KELLY. Where was that production a few months ago when he was still paying very high prices, 109 percent more than he paid the year before? Where was that production? Did production increase in the last two months? The last three months?

Mr. KENDELL. We had a significant amount of production shut in because of the hurricanes and we are still down about 9 percent from what the Gulf normally produces. Prices are set at the margin. If the gas is not available, people will bid for the last cubic foot of gas and bid prices up. If we have any kind of disruption in the system, we are going to see increased prices.

Ms. KELLY. The increased prices started before the hurricanes so you haven't answered that question. The thing that I really find confusing is the fact that the Department of Energy doesn't seem to be doing anything to try to keep a close contact to control prices here for these people because if we have a heavy winter in the northeast, there will be people who in my district will make a choice between whether they stay warm or whether they eat.

It is not just a greenhouse question. It is a question of survival for some people and I believe it is incumbent upon the Department of Energy to try to help right now before we get into that kind of a situation. If people are stockpiling natural gas right now, are you helping them in such a way that they will be able to meter that gas out at a lower price? What can you do to help us? What are

you doing to help us? Those are two questions I really would like to hear your answers to.

Mr. KENDELL. Unfortunately EIA is not a policy making organization. We don't really control the flow of natural gas. The flow of gas is controlled—

Ms. KELLY. Are you making recommendations to the DOE?

Chairman BRADLEY. Congresswoman Kelly, let me interrupt for a moment. EIA is the Energy Information Agency and they do projections on the long-term and short-term trends of the price of everything from renewable fuels to oil and gasoline.

Ms. KELLY. Those projections—

Chairman BRADLEY. Some of your questions, I think, would better be addressed to the Department of Energy as opposed to EIA which is an adjunct of that.

Ms. KELLY. But the Department of Energy is going to make their decisions based on exactly what this man's perceptions are of the reality of the market. That is my point.

Chairman BRADLEY. I understand your point. Since you are six minutes over your allotted time—

Ms. KELLY. Sorry.

Chairman BRADLEY. —I would like to recognize Congressman Chabot.

Mr. CHABOT. It gets pronounced all kinds of ways.

Chairman BRADLEY. Yes, I know.

Mr. CHABOT. I always tell people I don't care how they pronounce it as long as they vote for. That is especially important this year.

I appreciate the testimony, gentlemen. I want to apologize. This is the third hearing I have had in the last half hour. I am trying to get around to all of them so I will make it a point to review all your testimony but I don't want to start cross examining anybody here without having had an opportunity to read it so I want to thank you for any effort that you can make to keep prices down so small businesses can be productive and hire people. We are all for that. I want to thank the Committee for doing that and I yield back the balance of my time.

Chairman BRADLEY. All right. I will allow one more question for each of the panelists before we move on to the next panel. I would like to ask and any of you can answer this as you chose.

Ms. McDonald has to leave for another hearing.

Ms. MILLENDER-MCDONALD. Thank you, Mr. Chairman. I, like Mr. Chabot and others, are moving from one Committee to the other. I just happened to be leaving this Subcommittee ranking membership to go to a Full Committee ranking membership with the Senate. I must leave but I would like to thank all of you for being here. This is an important hearing, Mr. Chairman, and I would like to see if we can follow up on this again sometime soon.

I would like to introduce Mr. Richard Goodstein who will be the second panelist who is from my district, although he is Washington's representative of the Air Products and Chemicals, Inc., in my district. We welcome you here. I am sorry that I cannot listen to the hydrogen part of your natural gas and hydrogen but we will be in communication with you as we have always. Thank you so much for being here and thank all of the witnesses, those who are with us and those who are to come. Thank you all so much.

Chairman BRADLEY. Thank you. Let me just put this last question out then for myself. Would any of you talk about the role of LNG, how increasing it is going to be in importance, the lack of terminals for processing LNG, how that plays into it.

Mr. KENDELL. We are anticipating that liquified natural gas is going to be very important in the long-term, not so much in the short-term. As I testified, we expect LNG imports to increase from 651 bcf in 2005 to 710 this year and 950 in 2007. The important part of LNG is that it makes more supply available to us. When we have more supply, that tends to put downward pressure on prices and I think that it is important for consumers to recognize that relationship.

Chairman BRADLEY. Any further questions for this panel? Yes, Congresswoman Kelly.

Ms. KELLY. There are other aspects of energy that I have not heard you discuss. Interesting aspects of things like lowhead hydropower and other things that no one seems to be talking about when we are talking about alternative sources of energy. People talk about wind and water. Well, water also includes things like lowhead hydropower and for years there have been lowhead hydropower dams all over the nation and we could certainly increase that. Has anybody in the DOE done any studies on that?

Mr. KENDELL. Again, EIA has not looked at that. Among the renewables we expect that wind and geothermal are going to provide the major contributions to energy supply. There have been studies of lowhead hydro in DOE over the years but it is limited by the sites. You need a good site before you can undertake a project.

Ms. KELLY. That indicates what you said earlier that you didn't look at biomass to energy either.

Mr. KENDELL. Of course, we do look at biomass in our long-term forecast. You are welcome to pick up a copy of our Annual Energy Outlook or look at it on the web. We do try to cover all the different sources of energy and look at the prices, look at the cost involved in each of the production sources.

Ms. KELLY. Is there any hope on anything other than wind and—

Mr. KENDELL. Actually, there is. Looking at wood and biomass we have capacity going up three percent a year through 2030. We have co-firing with wood at power plants going up an enormous amount, as well as solar thermal and solar photovoltaic. Municipal solid waste goes up 1.3 percent. So there are a whole variety of renewable sources that are going up. I think one of the points we made in the panel earlier is that we are locked into fossil fuels for the foreseeable future because the fossil fuels continue to be less expensive, less costly than these renewable alternatives.

Ms. KELLY. Thank you. That is very helpful.

Chairman BRADLEY. And I would just add when we are talking about renewables, nonhydro renewable electricity generation represents about what, 2 percent of our overall generation so we could increase it several fold and it would still be a very small percentage of our overall energy mix.

Let me thank this panel very much for being here this afternoon. You have triggered significant discussion and we appreciate your participation. Thank you again.

We will take a couple of minutes to get the second panel seated and then I will welcome those folks, too.

Chairman BRADLEY. The second panel consist of Mr. Richard Goodstein who joins us from the Air Products and Chemicals, Inc. where he serves as a Washington representative. Air Products is the world's largest generator of hydrogen as a fuel and a key player on the path to a hydrogen economy. Mr. Goodstein has been deeply involved in Federal Government policy on hydrogen working closely with relevant Congressional committees and key federal agencies. Thank you very much for being here and we appreciate your testimony.

Next we have Mr. Jeff Uhlenburg. I hope I got that correct. Thank you. Jeff is from Donovan Heat Treating Company, a commercial heat treater out of Philadelphia. Mr. Uhlenburg is the President of this small manufacturing company and serves as the trustee on the Board of Metal Treating Institute. Thank you for joining us here this afternoon.

The third panelist is Mr. Paul Wilkinson from the American Gas Association. Mr. Wilkinson has served as Vice-President of Policy Analysis for 23 years. Mr. Wilkinson in his role at AGA is responsible for the development and implementation of AGA's analysis program including AGA's activities in the gas supply, gas demand statistics, economics, and environmental areas. Thank you for being here.

Lastly, Mr. Lowell Ungar. He is here today from the Alliance to Save Energy where he has served as the Senior Policy Analyst since 2003. In his capacity Mr. Ungar is active in appropriations issues for federal energy efficiency programs, utility, DSM policies, and appliance and fuel economy standards. Prior to joining the alliance Mr. Ungar has worked on Capitol Hill in both the House and Senate. Thank you for being here this afternoon. So, please.

STATEMENT OF RICHARD GOODSTEIN, AIR PRODUCTS AND CHEMICALS, INC.

Mr. GOODSTEIN. Thank you Chairman Bradley, Congresswoman Kelly, and I hope actually to get a chance, even though I didn't have it in my prepared comments, to address the question that was so vexing in terms of you getting your answer but I hope to get to that later, and Congressman Chabot.

Thanks to all of you for joining us today for the opportunity to, in my case, speak about the promise of hydrogen as a fuel of the future, the importance of natural gas in pursuit of a hydrogen economy, the challenges posed by high and volatile prices for natural gas, and what Congress can do about all this both short and long-term.

I am, as the Chairman said, the Washington representative for Air Products, the world's largest generator of hydrogen and this was pursuant to an invitation to the National Hydrogen Association of which we are members and thank you very much.

Air Products has 60 hydrogen generating and processing facilities throughout the world. More miles of hydrogen pipeline than anyone else, an unparalleled safety record, and a 50 percent market share in hydrogen globally. It is also the largest manufacturer

of equipment essential to making liquid natural gas which we have been talking about.

You will recall that President Bush embraced the promise of hydrogen in his State of the Union Address in 2003. A hydrogen economy truly would transform the nation freeing the U.S. from the dependence on foreign oil, helping Americans breathe clean air, ending our unsustainable trade imbalance, and allowing for reduced defense posture that is currently predicated on massive oil imports.

To achieve all of these remarkable objectives, the country will need the building block for hydrogen today which is a dependable supply of natural gas. Most of the hydrogen supplied by air products is generated through a process of reforming natural gas, natural gas from the local gas company coming in, pure hydrogen going out. I have a picture attached to my testimony. Air Products has a number of these what are called steam methane reformers mainly in the Gulf Coast and we actually have a couple in Congresswoman Millender-McDonald's district.

Because hydrogen fuel cells are much more efficient than car engines today, hydrogen made from natural gas is a good source of fuel for vehicles and can move the U.S. out of the grip of OPEC. Emissions from a hydrogen fuel vehicle are water vapor, nothing more. In a hydrogen economy air emissions and the need to regulate them would largely be a relic of an older age. Think about that.

In policy circles hydrogen is often discussed as if it were an option merely for the future but, in fact, hydrogen is generated in enormous quantities for industrial purposes today. You will see attached to my testimony a map showing hydrogen facilities throughout the country.

All these little circles and triangles and so forth depict in one fashion or another the fact that there is hydrogen available. Not necessarily in dispensable form but it exist in virtually every state in the union. In some cases, especially in Southern California, hydrogen is available as a vehicle fuel at prices competitive with gasoline today.

Air Products has developed over 40 hydrogen fueling stations throughout the world, mainly in the U.S. This is my last show and tell. I have attached a picture of what they look like. Not unlike a standard pump at a fueling station. In fact, the Secret Service let President Bush dispense hydrogen from one of them on Benning Road about two miles from here not long ago so it is safe.

The point is that between the existence of technology to dispense hydrogen and the existing network of hydrogen facilities around the country, the development of a hydrogen fueling infrastructure is quite feasible. The Holy Grail in the hydrogen world is totally renewable hydrogen where renewable energy such as hydropower, biomass, solar, wind, and others are used to generate the electricity to separate the oxygen from the hydrogen molecules and water. Until the price of renewable hydrogen is substantially reduced, hydrogen will largely be derived from natural gas.

It will be years before the demand for hydrogen is high enough to effect overall demand for natural gas so, again, hydrogen's development is not really going to put a crimp in the overall demand in the U.S. for natural gas. Nonetheless, count Air Products among

the many who believe that increased access to domestic natural gas supplies is an important objective for many reasons.

First, as we have heard, generating hydrogen and other gasses, what we do for a living, requires considerable amounts of electricity and high natural gas prices are driving up electricity costs for your farmers, for businesses, and obviously for people in their households.

Second, Air Products is a large chemical manufacturer. We have been suffering along with other chemical companies from the high prices of natural gas over the past several years. As one example, Air Products terminated methanol production at a chemical plant in Pensacola and began importing from Trinidad. We weren't happy about it. We didn't like moving those jobs offshore but in a global competitive market we really had no choice.

What can Congress do about all this? For starters, we ask Congress to realize that hydrogen is delivering and will deliver on its promise relatively soon. There are many members of Congress who have no qualms about supporting drilling for oil in Alaska even though everybody believes that first drop of oil won't be available to American consumers for 10 years.

Yet, the Department of Energy predicts that hydrogen will be in a commercial phase about 10 years from now. Cars, buses, cell phone towers, lap tops, small generators will increasingly be powered by hydrogen so we submit that anyone willing to wait on oil from Alaska should see hydrogen's potential in the same time frame.

Because hydrogen's benefits such as clean air and energy and dependence are largely common to all of us, free market forces alone won't do the job. The Federal Government needs to be arm-in-arm with the private sector to do what the Federal Government only can do tax preferences, loan guarantees, R&D spending, and developing codes and standards, and to be sure drilling for natural gas in an environmentally sensitive manner and in states that want it is important to maintain as a source of hydrogen for many years to come.

With appropriate Government support the U.S. can develop and maintain an edge over foreign competition in this very new field of hydrogen and fuel cell technologies. These technologies will not only clean up our own country but what a great export for the U.S. to have. Hydrogen has great promise and is more here now than many think. Thank you for spending the Subcommittee's time on this important subject and I look forward to any questions. Thank you.

[Mr. Goodstein's testimony may be found in the appendix.]

STATEMENT OF JEFF UHLENBURG, DONOVAN HEAT TREATING COMPANY

Mr. UHLENBURG. Thank you for allowing me to come here today to speak and testify. My name is Jeff Uhlenburg and I am the President of Donovan Heat Treating in Philadelphia. We are commercial heat treaters and we have 15 employees located in Philadelphia, Pennsylvania. I am a member of the National Association of Manufacturers. NAM is the largest broad-based industrial trade association in the country. Our members are in every industrial

sector and every state. I am also, as Congressman Bradley mentioned, a trustee on the board for the Metal Treating Institute for which I have been involved for over 25 years.

I have also been very involved in the energy issues in my company and natural gas purchasing for over 25 years. Heat treating basically requires only three things, metal, furnaces, and heat. I'm here today to talk to you today about the heat part. The process generally takes one to three days in a modern plant. Natural gas is by far the most common fuel used in heat treating today with 95 percent of all furnaces using new gas.

At Donovan's we fire five furnaces with gas. One burns as much as 16 million BTUs per hour. Gas is the easiest, most consistent, most reliable fuel to use. That is why it is used so much in heat treating and many other industrial processes. Natural gas is normally our second largest expense and has been since 2003, the largest being labor.

Prices for gas has risen more than 600 percent since the '90s from $2.00 per BTU to around $6.00 per BTU today and they were as high as $15 in the fall of '05. Even before last year's hurricanes the price of gas has nearly doubled in 2005 alone. Our plant in Pennsylvania was cut off from natural gas three times in the last five years.

We slowed down, we ran as best we could with propane as an alternate fuel, and the propane cost converted to natural gas was almost $20 in mcf. The gases started flowing again but the disruption and the supply and speculative bidding has caused the price to nearly double to $14. Recently, our gas bill hit an all time record in October and November of 2005. How are we handling it? We are continuing to run now because we are obligated to finish jobs that we have started for our customers.

We announced a substantial price increase in January so the price of heat treating is going up. We also expected sales to slow down soon and we had tentatively planned to shut down some of our production. We thought that the gas would be its most expensive. We did have a fairly mild January and that didn't exactly happen but the price is nowhere where it should be presently.

We alternated our work crews, though, so that we actually had to lay off almost each one of our workers for a short period of time. This is our story and it is not much different from a lot of other manufacturers that I know, especially other heat treaters. Our energy bills may be higher than theirs but their cost pressures are just as real.

Cost of manufacturing are already very high here in the United States and this kind of increase will push some businesses over the edge. You have already heard, or will soon here, about other manufacturers moving offshore because of energy costs. I know you are hearing a lot from constituents about the high cost of gasoline since the current cost of natural gas is the equivalent of $7 a gallon for gasoline. Just wait until the heating bills come in again this coming winter.

What happened to cause this pricing problem? It is easy to blame it on the hurricanes and all but the problem goes much deeper. In my opinion the natural gas shortage began five years ago or more when electric utilities around the country quit building new gen-

eration except those units fired with natural gas. They did so for a good reason.

It was the easiest way to satisfy the clean air regulations and environmental pressure from neighborhood activists. Why not take the easy road? But a gas-fired generator uses a tremendous amount of gas. At the same time that usage was going up the oil and gas industry was constrained from drilling in the most promising areas of our country to find the needed supply to supply the increases.

Without that extra supply it was inevitable that we would see prices going up. What the hurricanes did was take a dismal pricing situation and basically multiply it by two. The storms have also pointed out the national folly of forcing most of our gas infrastructure through one area of our country. What do we need to do as a country? We didn't get into this hole overnight and we are not going to get out of it that quickly either. At a recent NAM board meeting the consensus was that we really needed to develop our entire energy portfolio to take the pressure off of natural gas.

Long-term, say 20 to 25 years, we need to diversify our baseload of electricity which would include increased construction of clean coal and nuclear power plants. This will help relieve the pressure on natural gas for manufacturing, home heating, and peak power generations of electricity.

Our goal reserves are the world's largest. I know that as a native of Pennsylvania. We sit on top of one of the largest coal reserves in the world. Being equal to about Saudi Arabia's oil reserves on a BTU equivalent we have about a 250-year supply with greater opportunities for coal use and transportation and industry production on the horizon.

There are also new applications for coal and transportation fuel as well called a liquid technology pioneered by Germany almost a century ago and perfected more recently in South Africa. This offers the prospect of a new chapter in U.S. energy use.

Because of clean coal technology, emissions from coal fire utilities are 40 percent below the level of the 1980s. Carbon sequestration technology and gasification technologies are being used to create hydrogen energy also as Mr. Goodstein pointed out.

Additionally, we need more clean nuclear energy. Nuclear energy is a secure source that the nation can depend upon. Unlike some other energy sources it is not subject to unreliable weather or climate conditions, unpredictable cost fluctuations, or dependence on foreign suppliers. It produces no controlled air pollutants such as sulphur and particulates or greenhouse gases.

Finally, renewable sources of energy hold exciting promise for the future but much R&D is needed to take the place of that if that goal is to be reached. We are a fossil fuel based economy as pointed out here. In order to make a shift away from these fuels a significant government expenditure needs to take place to build that infrastructure. The NAM is not opposed to renewable fuels but we believe the Government policy should not mandate their use but encourage and provide incentives and allow the market place to work.

In the intermediate term when you increase the supply of oil and gas, the extra supply will eventually bring down the consumer

prices to increase the supply we need to open up the development of the Outer Continental Shelf, or OCS, and allow the states that permit offshore drilling to receive a large portion of the substantial revenue that comes with it. Currently 85 percent of all federally controlled coastal waters are off limits to energy production due to a federal moratoria that has blocked the state's access to our reserves.

The OCS, as pointed out earlier, has over 420 trillion cubic feet of natural gas resources, enough to heat 100 million homes for 60 years and enough oil to drive 85 million cars for 35 years. Congress should list federal restrictions that prevent states from developing these resources and doing so would increase the much needed domestic energy supplies and reduce prices, allow states to control their offshore energy resources, allow coastal states to benefit from energy development by sharing royalties resulting in hundreds of millions of dollars in local revenue, encourage the building of a gas pipeline from Alaska.

Short-term these are the things we can do right now. Allow companies like ours to have fast-track environmental permitting to switch to other kilns, boilers, whatever they use in their processes as long as they meet reasonable environmental standards for hazardous air pollutants. Businesses can then move quickly through the regulatory hurdles and things that they encounter.

Open the additional LNG terminals as soon as possible has great potential. Finally, conservation and efficiency is something each and everyone of us can do right here and right now which should be part of any company's normal course of business because it makes good business sense.

The Government's role should be to provide the mechanisms to encourage and educate manufacturers. We believe the EPA's Energy Star Program and the Department of Energy's industrial technologies programs are two such programs that provide the right mix of hands on education and creative problem solving.

As I said earlier, we will not get out of this hole quickly or easily but I believe that Congress holds the key to long-term energy independence and lower prices for oil and gas.

Manufacturers cannot compete with electric utilities for natural gas. Most utilities have an automatic pass-through of higher fuel bills to their customers.

Manufacturers that compete in a global economy do not have that luxury. If we don't turn this situation around, the end result will be continued loss of paying jobs in the United States, lower tax receipts, and increased imports. I urge you to think long-term and make good decisions for the entire country on this critical issue.

I thank you, Mr. Chairman and members of the Committee for the opportunity to present the NAM's and my company's view today.

Chairman BRADLEY. Great. Thank you very much.

Mr. Wilkinson.

[Mr. Uhlenburg's testimony may be found in the appendix.]

STATEMENT OF PAUL WILKINSON, AMERICAN GAS ASSOCIATION

Mr. WILKINSON. Good afternoon and thank you for this opportunity to discuss this very critical issue with you today. AGA represents 197 local energy utilities that deliver gas to over 56 million homes, businesses, and factories throughout the country.

I should note at the outset that local gas utilities do not profit at all from higher natural gas prices. We want what our customers want, adequate supplies at reasonable prices. Natural gas provides 40 percent of the energy consumed by small businesses in this country. The percentage would be significantly higher if we excluded lighting from which gas does not compete.

Gas is used for space and water heating, cooking, clothes drying, cooling, dehumidification, small scale electricity generation, and a variety of other applications. The price of natural gas has more than doubled for small business customers since 1999. Further, natural gas prices have been subject to great volatility for the past five years. High prices have placed a strain on all small businesses forcing some to curtail operations or shut down entirely.

Price volatility has made planning and budgeting extremely difficult for small businesses as energy comprises a significant share of total operating cost. It is critical that we begin to aggressively address the problem that has confronted small businesses for half a decade now. We urge the Congress to act decisively and swiftly to increase the supply of natural gas.

Gas production is not keeping pace with demand and prices have risen dramatically. Prices will only come down when we increase the supply of natural gas in the market place. The natural gas market was very stable in the '80s and in the '90s. Prices tend to fluctuate around an equilibrium of about $2 per million BTU. In fact, natural gas prices when adjusted for inflation fell during that period.

Just within the past year we saw $6.00 gas prices last June jump to $9.00 in August largely as the result of hot weather that pushed more gas into electricity generation. Prices spiked to $14 as a result of the hurricane disruption in September. They fell to about $11.00 in the early winter but a cold snap in December shot them right back up to $15. In January they fell back to the $7.00 range due to the warmest weather on record for that month. Today they remain around $6.00 per million BTU.

My point is that natural gas prices now respond immediately and dramatically to weather. There is no longer any slack in the system to accommodate sudden changes in supply or demand. The system is constantly running at full throttle and, therefore, a sudden change in supply or demand means a dramatic change in price. It is simply not good public policy to allow the whims of Mother Nature to dictate who can and you cannot heat their home or business or which plants will operate and which will shut down or to determine who will and who will not have a job.

I urge the Congress to begin to rectify this situation. Ending the absolute moratorium on offshore drilling is an important step in the right direction. In my view there is no question that we must do this. Natural gas is produced in a safe, efficient, and environmentally responsible fashion. We are talking about activity 50 to

100 miles offshore. It will not be seen, heard, nor smelled. No tankers, no barges, no spills.

I live in a coastal state and I appreciate the need to protect our beaches but I know this is no threat. I also know that a continued failure to act will only cause higher prices, added financial strain to millions of small businesses and homeowners, result in more unemployment and the continued deterioration of our economic base.

Failure to counteract these problems when we have the ability to do so with little or no adverse impact is, in my opinion, unconscionable. Energy efficiency must continue to play a key role in terms of easing the price pressure on natural gas markets. It is clear that natural gas customers throughout the country have been lowering their thermostats, tightening their homes and businesses, and installing more efficient gas appliances since the first oil embargo in the 1970s.

As a result, and as proof, the average commercial establishment using natural gas today uses roughly 25 percent less gas than it did in 1980. But energy efficiency alone is not the answer. Energy efficiency alone will not stop small businesses and factories from shutting down. It will not stop the layoffs that result of these shutdowns, and it will not adequately relieve the pain suffered by 65 million households throughout the country due to unjustifiably high natural gas prices.

There are a number of steps that must be taken in order to bring natural gas markets back into balance. I understand that the Congress does not have full control over all of it but we must unlock domestic sources of natural gas both on-shore and offshore and allow gas producers to explore for and produce gas more expeditiously.

We must begin construction of a natural gas pipeline from Alaska now. We can't afford to discuss the project for another 30 years. We must permit and build new LNG receiving terminals and not just in the Gulf Coast.

Further, given that our access to natural gas supplies is so constrained it is not wise to continue to rely on natural gas to provide 90 percent or more of our new electricity generation capacity. The mix of fuels used to generate electricity must be diversified including increased use of solar and wind technologies, the use of clean coal technologies like IGCC, and the use of nuclear power.

Thank you and I would be happy to respond to any questions you might have.

Chairman BRADLEY. Mr. Ungar, I'm sorry.

[Mr. Wilkinson's testimony may be found in the appendix.]

STATEMENT OF LOWELL UNGAR, ALLIANCE TO SAVE ENERGY

Mr. UNGAR. Thank you, Mr. Chairman. My name is Lowell Ungar and I am representing the Alliance to Save Energy, a bipartisan, nonprofit coalition of more than 100 business, government, environmental, and consumer leaders including some organizations represented here today.

We are honored to have Congressman Ralph Hall, Zach Wamp, and Ed Markey among our vice chairs and many small businesses among our supporters.

I am here to tell you how energy efficiency is the quickest, cheapest, and cleanest way both to help small businesses manage natural gas prices and to help bring those prices under control.

Mr. Chairman, you and the other witnesses here have starkly described the impacts of high gas prices and their origin in part in an excess of demand over supply. Yet, energy efficiency has helped keep direct natural gas use by homes and businesses, that is, natural gas use in the homes, not for electricity, help keep that use pretty flat for the past three decades even as our economy has more than doubled in size.

Energy efficiency is the nation's greatest energy resource. We now save more energy each year from energy efficiency than we get from any single energy source including natural gas. In fact, if we tried to run today's economy without the energy efficiency measures taken since 1973, we would need 43 percent more energy than we use now and our natural gas supply shortage would be much, much worse.

The potential of energy efficiency to reduce energy price volatility, energy security concerns and environmental impacts in the future, is even greater. The National Petroleum Council concluded in 2003 that supply from traditional North American natural gas production will not be able to meet projected demand and that "greater energy efficiency and conservation are vital near-term and long-term."

In a recent analysis by the American Council for an Energy Efficient Economy found that just a small reduction in natural gas use over the next few years could reduce wholesale natural gas prices by as much as one quarter. Because natural gas supplies are so tight, the potential impact of the energy efficiency is magnified.

I would like to highlight four energy efficiency measures that can reduce natural gas use and help small businesses. First, the energy policy act of 2005 included an important set of tax incentives for highly efficient buildings and equipment. These incentives can reduce U.S. natural gas use by 1.6 trillion cubic feet through 2020 while helping small businesses make, sell, and use energy efficient technologies.

However, the incentives are in effect for too short a time. A large commercial building initiated when the bill was signed last August will not be finished before the commercial building deduction expires in December of 2007 and, therefore, simply could not use that deduction.

The Alliance strongly supports extending the incentives as soon as possible with certain improvements.

Second, several effective federal programs help small businesses be more energy efficient and thus reduce both price pressure and impacts on natural gas. Energy Star was mentioned earlier. It works with thousands of small businesses across the country to encourage sales of energy efficient products and homes.

In the university-based industrial assessment centers, part of the industrial technology program at the Department of Energy, train university students and use them to conduct plant-wide energy assessments for small and medium-sized businesses. The administration has proposed to cut funding for both of these and for other efficiency programs. More funding rather than less for these programs

would be one of the quickest and most effective ways of addressing the natural gas situation.

Third, many utilities have found that helping their customers including small businesses to save a kilowatt hour of electricity or a therm of natural gas is cheaper than producing and delivering that energy. Several states such as Texas, Connecticut, and Nevada, are now developing innovative policies to set performance standards for utility energy efficiency programs.

As a focus for federal policy the energy efficiency resource has several advantages. It is available everywhere and available for both natural gas and electricity. It is cost effective and flexible and the potential energy and monetary savings are enormous.

Fourth, appliance standards have saved more natural gas than any other policy. The largest current opportunity is to require efficient residential furnaces in the northern states such as yours, but these furnaces may not be cost effective in all of the warmer states. Legislation would be useful to clarify that the Department of Energy could set separate levels for heating and cooling equipment in two different climate regions.

Building energy codes also are very important for saving natural gas. All of these codes are usually set at a state level. There are federal standards for manufactured housing and for homes with federally subsidized mortgages. These standards are very weak and need updating.

Consumers and businesses in this country have been hit by the worse energy price shocks in many years for natural gas and also for gasoline and in some areas for electricity. The Alliance urges Congress to seize the opportunity now due to the high prices to enact significant energy efficiency measures that will benefit small businesses, the rest of the economy, the environment, and energy security for years to come.

Thank you, Mr. Chairman. I would be happy to answer any questions.

[Mr. Ungar's testimony may be found in the appendix.]

Chairman BRADLEY. Well, I guess I am here by myself so I have free reign of questioning.

Let me start first with you, Mr. Goodstein. You indicated in your testimony commercial phase-in of greater use on a commercial basis of hydrogen as a decade away. Then you went on to say that in order to jump start more of a hydrogen economy and fuel cells and automobiles and fueling stations and things like that needed to be jump started, tax incentives for R&D, for facilities, building codes, loan guarantees. I think those were the things you mentioned. If you had your druthers what kind of federal limits on spending or how costly are some of these tax incentives, loan guarantees likely to be phased-in over that 10-year period?

Mr. GOODSTEIN. Let me tell you what it's not and then I will answer your question. People talk about the move toward a hydrogen economy needing to be something like an Apollo Program or a Manhattan Project. You hear those terms. President Bush has committed in the State of the Union address $1.2 billion in extra spending over five years. The Apollo Program cost $170 billion in today's dollars over 11 years.

We don't have that kind of money but it seems to me again when you look at all the savings in environmental protection and defense posture and so forth, money is fungible so if we had — if we could bring on a hydrogen economy sooner instead of a 50/50 cost share which is what the R&D now with the Department of Energy entails, maybe something slightly that brings more of an incentive toward companies like mine, or smaller companies that want to develop the storage capacity or the fuel cell that will bring — I use the analogy think of the old Univac computer and today's laptop.

That is where we are. We are actually closer to the Univac computer than the laptop but the capacity of these fuel cells is coming down rather rapidly thanks in part to the support of the Department of Energy, thanks to a lot of money that is being poured into labs of individual companies. The faster we can move that down the faster this technology will be out on the streets and doing all these wonderful things.

There have been bills that have been put forward $5.7 billion as opposed to $1.2 over five years in a kind of combination of incentives, guarantees, etc. We are not so pie in the sky as to say we are looking at an Apollo Program but we think that dollar per dollar this is a very good use of the Federal Government's resources.

Chairman BRADLEY. If I can move to you, Mr. Uhlenburg. Your company is a small manufacturing company. Are you able to hedge your natural gas contracting or are you totally at the will of the spot market pricing?

Mr. UHLENBURG. We are subject to both. We originally bought local gas in Philadelphia and we were an interruptable customer. We are presently now on the open market and hedging our gas because it has been the only way to survive right now. When we were an interruptable customer we were interrupted at one point for 67 consecutive days and I had to go to propane where my cost went from approximately $4 mcf up to over 15 and as high as 20.

I was not making profit at that time. It was only a matter of time until I would be out of business with that kind of numbers. Hedging has been the way of today and it takes a lot of time. You have to study the market and I have people to help me with that. It has been the way to survive in the world today. Yes, we are able to do that. It is one of the tacks that we use in order to survive.

Chairman BRADLEY. Mr. Wilkinson, I asked the earlier panel to comment on the lack of LNG terminals. I'm from New Hampshire but I followed the New Bedford proposal with great interest because even though we in New England don't depend on for a large amount of our home heating fuel on natural gas, there is an increasing amount.

As I said to the earlier panel, a huge amount of new electric generation of gas. The New Bedford proposal has been on the drawing board and it's been controversial. Could you just comment on lack of terminals and how big a roll that plays in our ability to import greater supplies of natural gas?

Mr. WILKINSON. I personally think that LNG is the best hope that we have in the relatively near term. That is, we have terminals under construction today that will be online in 2008 and 2009. I think we will have four or five terminals online out of the 40 proposed terminals in that time frame. I think that is the first oppor-

tunity to see any increased stability in the natural gas market place that Ms. Kelly was asking about.

I am very skeptical that there will be many, if any, terminals on the east to west coast of the U.S. Perhaps in the southeast. I am very skeptical about the northeast. It is unfortunate because the cost of LNG is in part a function of price. One of the best things you could do to bring a low-cost energy to New England would be to have an LNG line running from, say, from Norway to the Northeast rather than shipping—

Chairman BRADLEY. The country of Norway?

Mr. WILKINSON. Yes—rather than shipping LNG down to the Gulf Coast and then paying the pipeline charge to move it up to New England. Unfortunately, with the opposition that we see in the northeast in particular, it is very difficult and I know that most or many of the major terminal builders are reluctant to even propose project in that part of the country. The one most successful terminal builder right now is Shaneer Energy.

I spoke with the president of Shaneer Energy. He said he would not propose any project in the northeast no matter how much sense they made. He was going to Texas because they understand in Texas that those projects can be done in a way that was good for the State of Texas and good for the country and he wasn't going to waste $100 million trying to change public opinion.

Chairman BRADLEY. Mr. Ungar, would you care to comment on a couple of bills in Congress? I know this is a little bit out of your field but there have been several bills in Congress as we developed the energy plan last year to insist upon a nationwide renewal portfolio standard, something that several New England states, not New Hampshire but a number of states in the northeast, have adopted. Any thoughts on that?

Mr. UNGAR. In general we don't take a position on supply site resources except to note, as I said, that energy efficiency programs that utilities run in many states throughout the country are already both very effective in terms of reducing the need for generation and very cost effective. Typically there is a very large range. These programs can often save electricity at the rate of 3 or 4 cents a kilowatt hour which is much cheaper than you can generate it from renewable or, in fact, pretty much any other resources.

We certainly think it makes sense to incorporate efficiency resources. If you are going to look at any program to mandate or to fund alternative energy sources for electricity, we think it makes sense to look at efficiency as a cost effective resource that is available throughout the country and included in the program or as separate programs.

Chairman BRADLEY. I have no further questions. If any of you would like to give concluding remarks, I would be welcome to hear them, too. Thank you.

Mr. GOODSTEIN. Let me just say, again, this was a great forum for an important issue that really had two heads, the whole natural gas impact on small business. And as you are looking towards future energy technologies, that is obviously vital. I think the point was made by myself and others that they are really kind of hand and glove efforts here and we certainly appreciate all the help that you can give that you can persuade your colleagues that this is ef-

fort that is worth making because, again, the consequences absent an effort like this are ones that we just don't want to contemplate.

Mr. UHLENBURG. I would second that.

Mr. WILKINSON. I would just say we have outlined a number of things that can be done to help this market. I think there is an important vote tomorrow in the house that can help in that regard. We are optimistic and hopeful that things will work out on the House side and then go forward in the Senate as well.

Mr. UNGAR. I would conclude that energy efficiency as a response to natural gas prices helps small businesses in three ways. First, it reduces the price by reducing the demand pressure on prices. Second, energy efficiency by the small businesses reduces energy bills regardless of price. Third, many, and most of the companies, that are carrying out these energy efficiency measures are small businesses themselves. It is an important market and potential area for small businesses. Thank you.

Chairman BRADLEY. Let me conclude by thanking both this panel and the prior panel and the Committee looks forward to continuing to work with you on this, as I think you have all indicated, critically important subject.

[Whereupon, at 3:47 p.m. the Subcommittee was adjourned.]

Good Afternoon. I welcome you all to this hearing of the Tax, Finance & Exports Subcommittee of the House Committee on Small Business. I am pleased to be working closely with my colleagues as we review the effects of the high cost of natural gas on small businesses and future energy technologies. I look forward to hearing the insight provided by our witnesses, from both an industry and a policy viewpoint. With that said, I would like to thank our distinguished witnesses for taking the time to appear before us today.

At the very core of a strong economy is the availability of inexpensive sources of energy. It is our responsibility as Members of Congress to ensure that government is not interfering with the development and deployment of these energy sources and ensure that these resources are being extracted in an environmentally responsible manner. Our strategies must enable the development and expansion of ideas and the success of entrepreneurs, both domestically and internationally.

Currently, our small businesses are suffering from the high cost of natural gas, which, over the last year, has risen to prices as high as $15 per million BTUs. To date, the average customer is paying more than twice as much as they did in 1999, and with demand predicted to increase by roughly 37 percent over the next 15 years, there is no relief in sight.

These high prices are not only effecting businesses and consumers, but they are also hampering the technological advancements of our alternative fuel goals; specifically hydrogen. Natural gas and electricity are the primary energy sources for obtaining hydrogen. How can we realistically expect to advance the objectives of our alternative fuels strategies when we are providing one of the greatest obstacles ourselves through our energy policies?

We need to increase our nation's natural gas supplies either through increased domestic production or greater importation of international supplies, and above all develop more energy efficient technologies.

I am looking forward to hearing the testimony from our witnesses here today and I look forward to their thoughts on this extremely important topic. However, before we do so, I'd like to recognize our ranking member for her opening statement. Mrs. Millender-McDonald.

STATEMENT OF JAMES KENDELL

DIRECTOR, NATURAL GAS DIVISION

ENERGY INFORMATION ADMINISTRATION

U.S. DEPARTMENT OF ENERGY

before the

SUBCOMMITTEE ON TAX, FINANCE, AND EXPORTS

COMMITTEE ON SMALL BUSINESS

U. S. HOUSE OF REPRESENTATIVES

JUNE 28, 2006

Mr. Chairman and Members of the Committee, I appreciate the opportunity to appear before you today. The Energy Information Administration (EIA) is the independent statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data, analyses, and projections for the use of the Congress, the Administration, and the public. While we do not take positions on policy issues, our work can assist energy policymakers in their deliberations. Because we have an element of statutory independence with respect to our activities, our views are strictly those of EIA and should not be construed as representing those of the Department of Energy or the Administration.

Much of my testimony today is based on EIA's weekly, monthly, and annual statistics, as well as the June 2006 *Short-Term Energy Outlook*, which was issued on June 6. Before turning to the outlook for the Fall, I will briefly review the major forces affecting current natural gas prices.

High prices continue to dominate natural gas markets, although current average annual prices are below 2005 levels (**Figure 1**). The wellhead price for 2005 was an estimated $7.51 per thousand cubic feet (mcf)—the highest ever recorded. Wellhead prices in 2005 were nearly 40 percent higher than those in 2004 and roughly two and one-half times those in 2002. Commercial prices in 2005 were 23 percent higher than in 2004. Record high crude oil prices, increased demand from new natural-gas-fired electric power plants, depletion of natural gas resources, and major supply disruptions as a result of Hurricanes Katrina and Rita last Summer contributed to these historically high price

levels. Despite the high prices, residential and commercial natural gas consumers used about the same amount of natural gas in 2005 as in 2004. Industrial consumption declined by about 8 percent, but that was nearly offset by the 6-percent increase in natural gas use for electric power generation.

World Oil Prices

During most of the 1990s, the West Texas Intermediate (WTI) crude oil price averaged close to $20 per barrel, but plunged to almost $10 per barrel in late 1998 as a result of the Asian financial crisis slowing demand growth, while extra supply from Iraq was entering the market for the first time since the Gulf War (**Figure 2**). Subsequently, as Organization of the Petroleum Exporting Countries (OPEC) producers adhered to a coordinated production quota and reduced output, crude oil prices not only recovered, but increased to about $30 per barrel as demand grew. The most recent increase in crude oil prices began in 2004, when they almost doubled from 2003 levels, rising from about $30 per barrel at the end of 2003 to peak at $56.37 on October 26, 2004. After falling back briefly, prices then continued to rise in 2005 and in the early months of 2006. For much of June, we saw WTI prices hover around the $70 per barrel benchmark—ranging from a high on June 2 of $72.73 per barrel and a low of $68.48 per barrel on June 13. This is a significant change from what we experienced during the latter half of the 1980s and the 1990s. The elevated level of crude oil prices contributed to increased natural gas wellhead prices and, as a result, to increased end-use natural gas prices. (Natural gas and

crude oil prices are related because natural gas and crude oil are substitutes in consumption and also complements, as well as rivals, in production.)

Demand Trends, Especially for Electric Power

The level of natural gas prices that prevailed in the 1990s limited economic incentives for producers to find and produce new supplies. A series of mild winters in the 1990s limited home-heating demand and helped keep natural gas prices from rising. Natural-gas-fired electric power generation increased over 70 percent between 1993 and 2004, reflecting both growth in electricity demand and a large increase in the number of natural-gas-fired electric generators. A significant quantity of new natural-gas-fired generating capacity was built in recent years as environmental performance, ease of siting, high efficiencies, relatively low capital costs, and the level of natural gas prices experienced during the late 1990's--when many of these facilities were planned--made these facilities appear to be an attractive investment. The vast majority of new generation capacity does not have the capability to use a backup fuel. Some other facilities, which once were capable of using another fuel, now lack infrastructure or storage capacity or have other constraints affecting their ability to operate with alternative fuels. This lack of flexibility, along with the high price of oil, makes it more difficult for plant operators to respond to increasing natural gas prices by fuel switching.

Depletion of Natural Gas Resources

A key question facing producers is whether natural gas resources in the mature onshore lower-48 States have been exploited to a point at which more rapid depletion rates

eliminate the possibility of increasing—or even maintaining—current production levels at reasonable cost.

Depletion is a natural phenomenon that accompanies the development of all nonrenewable resources. Physically, depletion is the progressive reduction of the overall volume of a resource over time as the resource is produced. In the petroleum industry, depletion may also more narrowly refer to the decline of production associated with a particular well, reservoir, or field. As existing wells, reservoirs, and fields are depleted, new resources must be developed to replace depleted reservoirs.

Depletion has been counterbalanced historically by improvements in technology that have allowed natural gas resources to be discovered more efficiently, extended the economic life of existing fields, and allowed natural gas to be produced less expensively, making resources available that previously were too costly to develop. While technological progress for both conventional and unconventional recovery is expected to continue to enhance exploration, reduce costs, and improve production technology, the depletion of conventional and unconventional natural gas resources is also expected to continue as more of the natural gas resource base is developed.

Hurricanes Rita and Katrina

The Atlantic hurricane season of 2005 was the most active season since accurate record-keeping began in 1944. There were 27 named storms, including 15 hurricanes, 7 of which were classified as Category 3, 4, or 5. The paths of five of those major hurricanes

passed through the Gulf of Mexico, significantly disrupting oil and natural gas production.

Hurricanes Katrina and Rita passed through the heart of the Gulf producing region, resulting in widespread shut-in production and infrastructure damage, some of which continues to the present. At one point just prior to the landfall of Katrina, 79 percent of Gulf platforms were evacuated, and 8.8 billion cubic feet per day of natural gas production (88 percent of production, relative to the Minerals Management Service (MMS) base level) was shut in. Hurricane Katrina destroyed 44 platforms as it passed over the Outer Continental Shelf producing region, including some of the deepwater projects that are still under initial construction. As Hurricane Rita subsequently passed over the producing region, up to 93 percent of platforms were evacuated, and 81 percent of natural gas production was shut in. Sixty-nine platforms were destroyed by the hurricane-force winds. As of June 19, 2006 (latest MMS data), total production of natural gas has been reduced by 804 billion cubic feet since Katrina approached landfall 10 months ago. That reduction amounts to more than 20 percent of yearly natural gas production from the Federal offshore fields in the Gulf of Mexico, according to MMS data. Additional volumes of natural gas production were lost in areas under Louisiana State jurisdiction. As of June 19, 2006, almost 940 million cubic feet per day of natural gas production still remained offline. While most of that production will ultimately be restored, some part it may be permanently lost.

Immediately following the landfall of Hurricane Katrina, natural gas prices increased sharply, and Hurricane Rita further exacerbated the already high prices (**Figure 3**). The

Henry Hub spot price increased to its all-time peak of $15.40 per million Btu (mmBtu) by December 13, 2005. Similarly, commercial prices averaged $15.51 and $14.62 per mmBtu in November and December, respectively, which were 49 and 38 percent higher, respectively, than the previous year's levels. Since the beginning of 2006, natural gas prices have decreased. The Henry Hub spot price is currently well below the pre-storm price levels and is about 20 percent lower than the spot price last year at this time. The current outlook for the upcoming Winter, however, reflects expectations that natural gas spot and commercial prices will be somewhat higher throughout the remainder of the *Short-Term Energy Outlook* forecasting period ending in December 2007, compared with current levels, but will not reach the peak levels of 2005.

Thus Far in 2006

Natural gas spot prices trended downward between mid-December 2005 and early-March 2006, likely reflecting the repairs made to natural gas infrastructure damaged by the 2005 hurricanes and an improved natural gas supply situation. This past Winter was relataively mild, resulting in unusually high storage inventories. On the whole, temperatures during the 2005-2006 heating season were warmer than normal and warmer than last year for the same 5-month period, as measured by natural-gas-customer-weighted heating-degree days (HDDs) published by the National Weather Service. As of March 31, 2006, at the end of the heating season, working gas in storage was an estimated 1,692 billion cubic feet (bcf) or about 59 percent above the 2001-2005 average of 1,066 bcf. Storage inventories continued to grow, resulting in a June 16, 2006 (latest available data), volume

for working natural gas in storage of 2,476 bcf. Stocks are 451 bcf higher than last year at that time and 643 bcf, or about 35 percent, above the 5-year average of 1,833 bcf.

Because of storage capacity limitations and uncertainty about the possibility of high temperatures and hurricane-related production disruptions later this Summer, however, current high storage levels relative to seasonal norms may not persist through the 2006-2007 heating season.

Uncertainty with respect to longer-term supply is reflected in the June 21, 2006, futures contract prices for the upcoming heating-season months (November 2006 through March 2007), which are about $3.50 per mmBtu higher on average than the Henry Hub spot price on that date. Overall, the average of 12-month-ahead futures prices (July 2006 through June 2007) traded at a premium of roughly $2 per mmBtu relative to the Henry Hub spot price, averaging $8.57 per mmBtu as of Wednesday, June 21. These differentials provide suppliers with a strong economic incentive to inject natural gas into storage. However, the elevated levels of working natural gas stocks provide operators increased flexibility in the timing of their storage injections.

The current market price of natural gas is well below the price of crude oil on an energy equivalent basis. For example, at a price of $6.50 price per mmBtu of natural gas, the price of a barrel of crude oil would need to be below $40 for the two fuels to have the same price per unit of energy content. With the market price of WTI crude oil currently above $70, natural gas users today are enjoying significantly lower energy costs than oil users. While oil prices are set in a global marketplace, natural gas prices still primarily reflect the balance of supply and demand within North America.

The Short-Term Energy Outlook

According to the Energy Information Administration's (EIA) latest *Short-Term Energy Outlook* (*STEO*), released on June 6, natural gas prices are projected to be lower through the rest of this year relative to the corresponding 2005 levels. The expected average for 2006 for Henry Hub spot prices of $7.74 per mcf is down $1.12 from the 2005 average, partly as a result of weak heating-related demand this Winter and the resulting high levels of natural gas in storage. For 2007, the Henry Hub average price moves back up to average $8.81 per mcf, assuming sustained high oil prices, normal weather, and continued economic expansion in the United States. The monthly average WTI crude oil price is projected to average $68 per barrel in both 2006 and 2007.

The price of natural gas to commercial users reflects the market price of gas, which is passed through into commercial rates based on the cost of acquiring gas, as well as the costs of transmission and local distribution. Commercial natural gas prices on a delivered basis for 2006 are expected to average about 5 percent higher than the average of $11.58 per mcf in 2005. Average prices in 2007 are projected to remain close to the 2006 level. The situation of individual commercial users is likely to vary widely across regions and suppliers.

Total U.S. natural gas demand in 2006 is expected to fall about 0.2 trillion cubic feet (tcf), or 0.9 percent, below the 2005 level and then increase by about 0.8 tcf, or 3.8 percent, in 2007 (**Figure 4**). With weak electric heating load due to the warm January and weaker expected cooling load this Summer compared with 2005, the consumption of natural gas for generation of electricity is expected to increase only slightly, by 0.3

percent in 2006, then increase by 0.7 percent in 2007. Also, because of the exceptionally warm January this year, residential consumption in 2006 is projected to fall by 6.0 percent from 2005 levels and then increase by 7.7 percent in 2007. Recovery in natural-gas-intensive industrial output following the 2005 hurricanes will likely contribute to growth in industrial natural gas consumption this year (up 2.2 percent) and in 2007 (up 3.6 percent).

Domestic dry natural gas production in 2005 declined by 2.7 percent, largely in response to hurricane-induced production shut-ins and infrastructure disruptions in the Gulf of Mexico. Dry natural gas production is projected to increase by 0.7 percent in 2006 and 1.2 percent in 2007. Total net liquefied natural gas (LNG) imports are expected to increase from their 2005 level of 630 bcf to 710 bcf in 2006 and 950 bcf in 2007.

As mentioned above, as of June 16, 2006, working natural gas in storage was an estimated 2,476 bcf, which is higher than ever before recorded for that date since industry and EIA began collecting weekly data in 1994. Stocks are 451 bcf above the year-ago levels and, according to the latest *STEO*, the level of working natural gas in storage in each of the remaining months of 2006 is expected to exceed the 2005 comparable levels. The level of working natural gas in storage at the onset of the upcoming heating season (November 1) is expected to reach 3,462 bcf, which is 268 bcf or 8.4 percent higher than the level on November 1, 2005. However, the 2006-2007 heating season (November 1 - March 31) is projected to be more than 6 percent colder than the 2005-2006 heating season, as measured by natural-gas-customer-weighted HDDs.

Mr. Chairman and Members of the Committee, this completes my testimony. I would be happy to answer any questions that you might have.

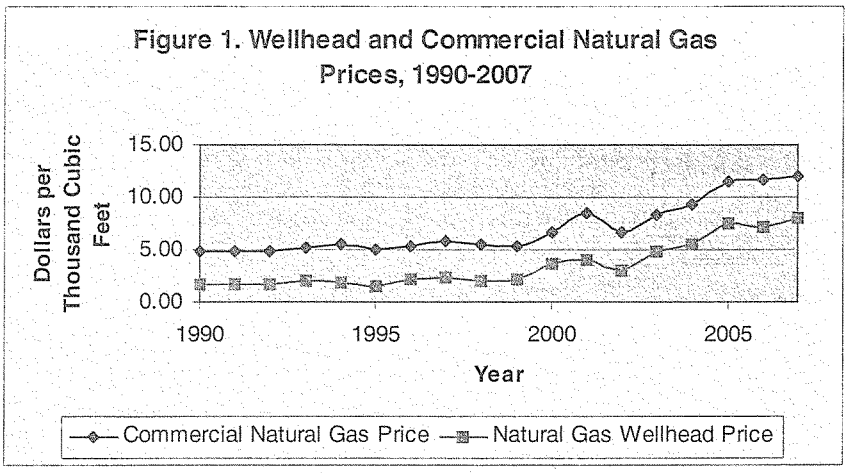
Figure 1. Wellhead and Commercial Natural Gas Prices, 1990-2007
Dollars per Thousand Cubic Feet
15.00
10.00
5.00
0.00
1990
1995
2000
2005
Year
Commercial Natural Gas Price
Natural Gas Wellhead Price

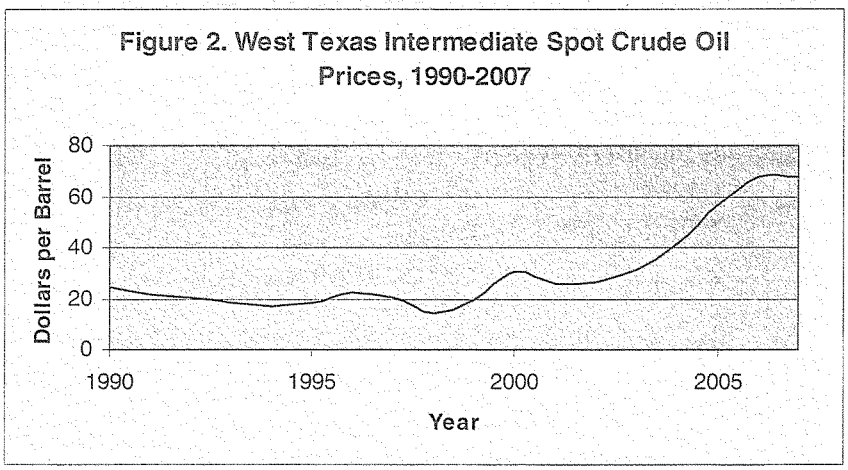
Figure 2. West Texas Intermediate Spot Crude Oil Prices, 1990-2007
Dollars per Barrel
80
60
40
20
0
1990
1995
2000
2005
Year

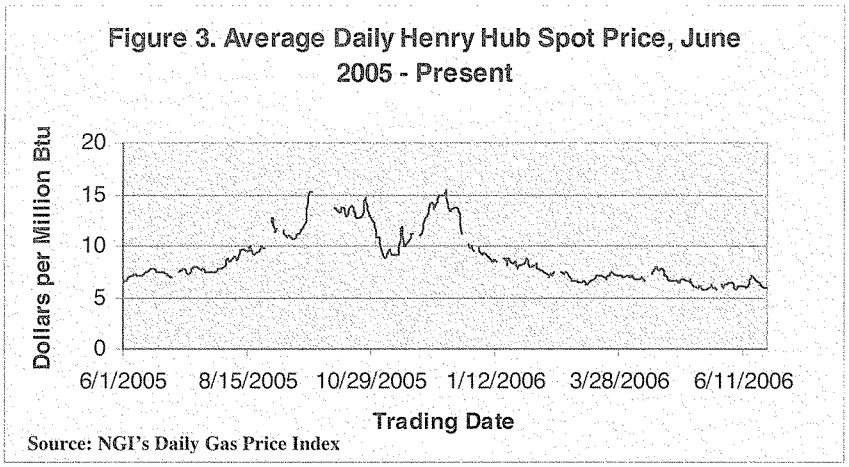
Figure 3. Average Daily Henry Hub Spot Price, June 2005 - Present
Dollars per Million Btu
20
15
10
5
0
6/1/2005
8/15/2005
10/29/2005
1/12/2006
3/28/2006
6/11/2006
Trading Date
Source: NGI's Daily Gas Price Index

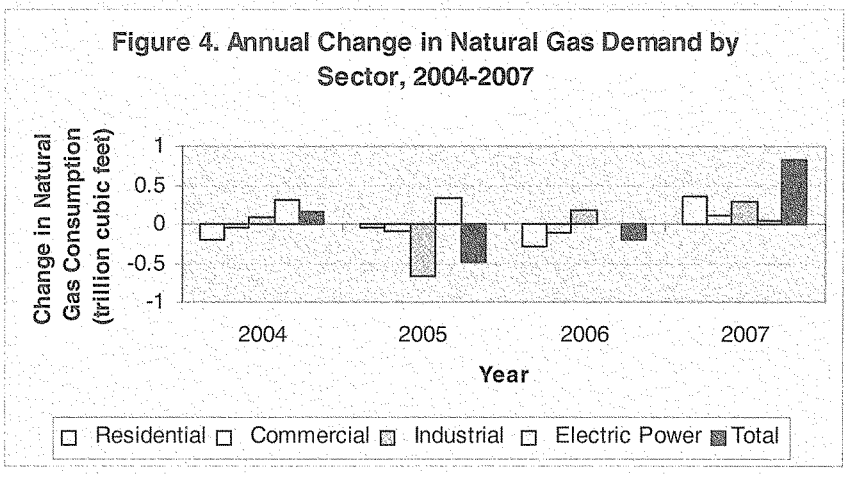
Figure 4. Annual Change in Natural Gas Demand by Sector, 2004-2007
Change in Natural Gas Consumption (trillion cubic feet)
1
0.5
0
-0.5
-1
2004
2005
2006
2007
Year
Residential
Commercial
Industrial
Electric Power
Total

Statement of
Walter Cruickshank
Deputy Director, Minerals Management Service
and
Tom Lonnie
Assistant Director Minerals, Realty and Resource Protection
Bureau of Land Management
United States Department of the Interior
Before the
House Committee on Small Business
Subcommittee on Tax, Finance, and Exports
Oversight Hearing
The Effects of High Cost of Natural Gas on Small Businesses and Future Energy Technologies

June 28, 2006

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear here today to discuss the role of the Department of the Interior in meeting America's demand for natural gas and its effect on small businesses and future energy technologies. Our statement will be limited to the role of the Department of the Interior in managing and providing access to energy resources on federal lands.

The Interior Department manages the resources that provide a third of our nation's energy. These resources include fossil fuels, such as coal, oil, and natural gas, as well as renewable sources, such as geothermal steam and wind. Within the Department, several agencies play a significant role in helping America meet its natural gas needs: the Bureau of Land Management (BLM), the Minerals Management Service (MMS), the U.S. Geological Survey (USGS), and the Office of the Assistant Secretary for Indian Affairs. Our testimony today will address the role of each of these agencies, as well as the natural gas provisions in the Energy Policy Act of 2005.

Minerals Management Service

No discussion of our efforts to meet America's natural gas demand would be complete without examining the role of the Minerals Management Service and its management of natural gas resources on the Outer Continental Shelf (OCS). The OCS is a major source of oil and natural gas for the domestic market, contributing more natural gas for U.S. consumption than any state except Texas. As steward of the mineral resources on the 1.76 billion acres of the Nation's OCS, MMS has, in 2005 alone, managed OCS production of more than 3.2 trillion cubic feet (tcf) of natural gas for U.S. consumption.

Today, MMS administers approximately 8,500 leases and oversees approximately 4,000 oil and gas production facilities on the OCS, accounting for 21 percent of our domestic natural gas production. The production of natural gas from the OCS exceeds 10 billion cubic feet per day. Within the next 5 years, offshore production will likely account for more than 23 percent of U.S. natural gas production. The vast majority of new gas production on the OCS is expected to come from new discoveries in the deep water and from deep-gas wells drilled in shallow water – wells drilled to depths as much as 35,000 feet below the floor of the ocean. In Fiscal Year 2004, $3.3 billion in royalties were paid from OCS natural gas production.

The Role of the National Energy Policy (NEP)

The President's NEP includes directives to diversify and increase energy supplies, encourage conservation, and ensure adequate energy distribution. One of the NEP challenges is to increase energy supplies while protecting the environment. The MMS has implemented a number of NEP directives to increase domestic energy supplies by ensuring continued access to Federal lands for domestic energy development, and by expediting permits and other federal actions necessary for energy-related project approvals.

For example, we are helping to ensure that OCS resources remain a solid contributor to the Nation's energy and economic security by holding OCS lease sales on schedule in available non-moratoria areas. Since March 2001, DOI has held 18 OCS oil and natural gas lease sales on schedule while undertaking a comprehensive consultation process with other Federal agencies, State and local governments, and the public. These sales resulted in leasing of almost 24 million acres of OCS lands for oil and gas exploration and development, and generated about $3.2 billion dollars in bonus bid revenue (not counting future royalties and rentals) for the U.S. Treasury. Over $581.8 million in bonus bids were received from OCS Sale 198 (March 2006) alone. The leases issued as a result of these sales will provide additional revenue from rental fees and royalty on any production that may result. These revenues and any new discoveries will contribute funding for our economy and new oil and gas supplies to meet the future energy needs of the nation.

MMS and the Energy Policy Act of 2005

The recently enacted Energy Policy Act of 2005 included 3 provisions creating incentives that are intended to stimulate exploration and production of natural gas in the OCS. These incentives encourage exploration and production in high risk areas: deep gas plays on the shallow shelf, water depths of 2000 meters or more, and development of gas hydrates. In addition, the Energy Policy Act confers upon the Secretary new responsibilities over Federal offshore alternate energy and related-uses of the OCS including wind, wave, current, solar energy, hydrogen generation, and projects that make alternative use of existing oil and natural gas platforms in Federal waters. These projects will help diversify our nation's energy resources.

OCS Trends

The strongest trend on the OCS today is the continuing development of the Gulf of Mexico deep water acreage. The U.S. is now in its tenth year of sustained expansion of domestic oil and gas development in the deep water area of the Gulf of Mexico (GOM). Deep water means that the distance from the water's surface to where a drill bit first touches mud is at least 1,000 feet — almost twice the height of the Washington Monument. In fact, industry is now drilling in waters seven to ten thousand feet deep, some 2 miles, and at these depths the engineering challenges increase substantially.

There were no less than nine discoveries of oil and gas in deepwater in the Gulf of Mexico in 2005. At year's end, there were nine rigs drilling in 5,000 feet of water or greater – the "ultra" deepwater zone, compared with seven, one year ago. Anticipated discoveries from these facilities will help sustain production increases in deep water, just as past discoveries will significantly raise production in 2006. We expect that it will be several years before deep water areas of the Gulf of Mexico reach their full potential. The deep water activity in the Gulf of Mexico has been a major success story. Since the beginning of 2000, new discoveries from deep water added over 6.2 billion barrels of oil equivalent (BOE), a 50 percent increase over the total deep water BOE discovered from 1974 to 1999.

As of March 2006, there were 118 deep water hydrocarbon production projects on line. Production from deep water was an estimated 950 thousand barrels of oil per day and 3.8 billion cubic feet of natural gas per day by the end of 2004. Production would have been even greater if not for shut-in production caused by Hurricane Ivan. Production statistics from 2005 will be similarly impacted by Hurricanes Katrina and Rita.

More than 990 exploration wells have been drilled in the deep water Gulf since 1995. At least 126 deep water discoveries have been announced since then. Significantly, in the last seven years, there have been 22 industry-announced discoveries in water depths greater than 7,000 feet (2,134 meters), seven in 2004 alone.

This steady advancement in deep water production over the last decade and for the coming decade would not be possible without major advances in offshore technologies that are truly amazing. Advances that allow remote control of drilling operations from control rooms that are miles away; dynamic positioning of drill ships using multiple engines that are the size of the meeting room we are sitting in; floating production platforms with surface area the size of football fields; anchoring cables to hold facilities in place that are made up of a combination of traditional steel and synthetic materials; pipe laying ships that can lay miles of pipeline in thousands of feet of water. In fact, the Thunder Horse platform incorporated over one hundred technological advancements. The industry ingenuity that we see in deep water is the same approach used in deep shelf drilling operations on the shallow shelf where operators are targeting deep natural gas reservoirs that require drilling 15,000, 20,000 and in some instances 35,000 feet deep through extremely high temperature and pressure conditions. MMS resource estimates point to about 55 Tcf of natural gas in this emerging frontier. Subsea gas production increased more than 110 percent between December 2000 and May 2004.

As we sit here, operators are drilling the Blackbeard project to more than 35,000 feet – over 6.5 miles. This well will take almost a year to drill.

OCS Resource Assessments

In 2006, the MMS completed estimates for undiscovered technically recoverable resources underlying the OCS. The mean estimate is 420 trillion cubic feet (Tcf) of natural gas, which is a 16 percent increase over the 2000 estimate for natural gas as a result of new information obtained from recent exploration in the Gulf of Mexico and revised assessments of new geological concepts in Alaska and on the Atlantic OCS. To put some perspective on the 420 Tcf natural gas resource estimate for offshore production, the Energy Information Administration Annual Energy Outlook 2006 states that "[p]roduction of lower 48 non-associated (NA) onshore conventional natural gas declines from 4.8 trillion cubic feet in 2004 to 4.2 trillion cubic feet in 2030."

The Nation's natural gas potential may not rest entirely on conventional gas resources. Scientists are now studying the possibility that a unique ice-like substance may hold the key to future energy resources. Methane hydrates are naturally occurring ice-like solids in which water molecules have trapped gas molecules. Hydrates are found in locations with high pressure and low temperature—over 98 percent of natural gas hydrate resources are estimated to occur in offshore areas under ocean sediments. The USGS estimates that domestic natural gas hydrates in-place resources are 200,000 – 300,000 Tcf. In comparison, the current mean estimate of all untapped technically recoverable U.S. natural gas resources is 1,000 Tcf; U.S. proved natural gas reserves are 200 Tcf; and annual U.S. natural gas consumption is about 22 Tcf. Discovering methods to locate, produce, and transport the gas from hydrate formations to the market are keys to their potential use. The Energy Policy Act of 2005 directs Federal research efforts to this potential new energy source.

The first preliminary estimate of technically recoverable methane hydrate resource potential on the OCS should be completed next year. The MMS is working closely with the USGS to develop the methodology used in the hydrate assessment. In anticipation of industry's move to develop natural gas from methane hydrates, MMS is also developing new methods for evaluating the amount of recoverable natural gas from methane hydrates.

5-year Oil and Natural Gas Leasing Program

The OCS Lands Act requires the Secretary of the Interior to prepare and maintain a schedule of proposed oil and gas lease sales on the Federal OCS that is determined to best meet national energy needs for the 5-year period following program approval. The 5-year program specifies the size, timing and location of areas proposed for Federal offshore oil and gas leasing. In order for a lease sale to be held on the OCS, the sale must be included in the 5-year program. To be on this schedule, the area must have been part of the multi-phased analyses required under section 18 of the Outer Continental Self Lands Act (OCSLA).

MMS's goal is to develop a program that is responsive to the Nation's energy needs, ensures environmental safeguards, and addresses public concerns. In developing the 5-year program, section 18 of the OCSLA requires that we analyze and compare areas of the OCS in terms of hydrocarbon potential, environmental sensitivity, and other factors. As part of this assessment, MMS solicits and considers input from all stakeholders during multiple stages of the process. The MMS also takes into consideration laws and policies of affected coastal States.

In August 2005, the Department began the process of developing the next 5-Year Oil and Gas Leasing Program 2007-2012 by requesting comments on all OCS areas. On February 8, 2006, the Department announced its draft proposed program for the 5-year OCS Oil and Gas Leasing Program 2007-2012. This was the second step in a five-step process that affords substantial opportunity for public comment. The following is the development schedule for the 2007 – 2012 5-year program:

- August 24, 2005 -- Solicit comments and information (*Federal Register Notice*)
- February 2006 -- Issue draft proposed program, solicit comments (*60-day comment period*)
- Summer 2006 – Issue proposed program and draft EIS, solicit comments (*90-day comment period*)
- Winter 2007 – Issue and deliver to Congress the proposed final program and final EIS for a *60-day period.*
- Spring 2007 – Approve five-year program for July 2007 – June 2012

Gulf of Mexico Production Shut In Update

Hurricanes Katrina and Rita affected the short term production of oil and gas on the OCS. As of June 19, 2006, shut-in oil production was 179,970 barrels of oil per day (BOPD). This shut-in production is equivalent to almost 12 percent of the daily oil production in the Gulf of Mexico, which is currently about 1.5 million BOPD. June 19, 2006's shut-in gas production was 935.67 million cubic feet (MMcf) per day. This shut-in gas production is equivalent to over 9% of the daily gas production in the Gulf of Mexico, which is currently about 10 billion cubic feet (Bcf) per day. The cumulative shut-in oil production for the period between August 26, 2005 and June 19, 2006 is 166,312,453 barrels, which is equivalent to just over 30 percent of the yearly production of oil in the Gulf of Mexico (about 547.5 million barrels). The cumulative shut-in gas production for the same period is 803.604 Bcf, which is equivalent to just over 22 percent of the yearly production of gas in the Gulf of Mexico (about 3.65 Tcf).

Bureau of Land Management

The BLM manages over 261 million acres of public land, primarily in the western United States, and over 700 million acres of federally owned subsurface mineral estate. Its mandate from the Congress through the Federal Land Policy and Management Act of 1976 (FLPMA) is to manage the public lands for multiple uses and to sustain the health,

diversity and productivity of these lands for the use and enjoyment of present and future generations.

The range of activities on the public lands managed by the BLM is as diverse as the land itself. Commercial uses, such as oil and gas production, mineral development, livestock grazing, and timber harvest coexist with various other uses, such as recreation, and cultural and historic preservation. Responsible stewardship of the public lands means the BLM must balance multiple and potentially conflicting uses, including increased demands for recreation, open space and energy production.

Demand for energy in this country has outstripped domestic energy production. Although domestic energy production has nearly doubled in the past 50 years, population growth and increased economic activity have resulted in significantly higher demands for energy. In 2004, we imported close to 58% of our oil. The Energy Information Agency projects that number to grow to 62% by 2030. Natural gas consumption will grow by about 20% in that same time period.

We must find ways to reduce our energy consumption and increase our energy efficiency and domestic energy production. Further, our energy production needs to be secure, affordable, and minimize environmental impacts.

Overview of the Onshore Oil and Gas Program

The Mineral Leasing Act of 1920, as amended, and the Mineral Leasing Act for Acquired Lands of 1947, as amended, vest responsibility with the BLM for managing oil and gas leasing on approximately 700 million acres of BLM, national forest, and other Federal lands, as well as private lands where the mineral rights have been retained by the Federal Government. The BLM works to ensure that development of mineral resources is in the best interest of the Nation.

The BLM's Oil and Gas Management program is one of the major mineral leasing programs in the Federal government. The BLM administers over 45,000 oil and gas leases, of which 23,000 are currently producing and less than a tenth of 1% of the federal mineral estate is disturbed by oil and gas production operations. Domestic production from the 74,000 Federal and Indian onshore oil and gas wells accounts for 18 percent of the Nation's natural gas and 5 percent of the Nation's oil, with sales values exceeding $19.6 billion in Fiscal Year 2005. In 2003, we released an Energy Policy and Conservation Act (EPCA) report. This study by BLM, USGS, DOE, USFS done at request of Congress and signed by President Clinton identified 5 EPCA basins in MT, WY, UT, CO and NM as containing an estimated 139 Tcf - enough to the heat 55 million homes for almost 30 years. More than half of these lands are under federal management.

Domestic production of natural gas has been increasing over the last three years. In Fiscal Year 2003, 2.4 trillion cubic feet (Tcf) of natural gas were produced from Federal (non-Indian) lands. In Fiscal Years 2004 and 2005, 2.8 Tcf and 2.9 Tcf, respectively, were produced. In addition to the Federal onshore leases, the BLM supervises the

operational activities of 3,700 producing Indian oil and gas leases. In FY 2005 322 million cubic feet of natural gas were produced from American Indian lands.

While domestic production on public lands has increased over the last three years. It is important to recognize that the BLM manages Federal lands for multiple use under the Federal Land Policy and Management Act of 1976. Energy production is just one of several uses. In addition, the BLM must comply with a host of important environmental laws and associated regulatory processes, which extends the time it takes for energy development to occur on public lands.

Processing of Applications for Permits to Drill (APDS)

The demand for onshore oil and gas is reflected in the dramatic increase in the number of applications for permit to drill (APDs) the BLM receives from one year to the next. The number of APDs received by the BLM has increased every year since 2002, and we anticipate this trend to continue into 2007 and beyond. A recitation of the numbers illustrates this dramatic trend. The BLM received 4,585 APDs in 2002; 5,063 in 2003; 6,979 in 2004; and 8,351 in 2005. Our current projection is that we will receive over 9,700 in 2006 and over 10,500 in 2007. We are proud of the progress we have made in response to this increasing demand; in 2005, we processed 7,736 APDs, a record number. However, despite this significant achievement, it is clear that more needs to be done to improve the APD process.

BLM and the Energy Policy Act of 2005

The Energy Policy Act of 2005 addresses conservation; energy supply from oil, gas, coal and renewable sources (wind, biomass, geothermal and solar); distribution of energy; and research into future forms of energy. The BLM plays a role in each of these areas. The Energy Policy Act of 2005 contains several provisions through which the BLM is working to improve the APD permit approval process, expedite oil and gas leasing on public lands, and ensure environmentally responsible natural gas production on public lands in an environmentally-responsible manner. The Energy Policy Act of 2005 will allow the BLM to continue streamlining efforts in leasing and permitting. The BLM has been working with other regulating agencies to develop a one-stop permitting process for oil and gas activities. The objective of grouping the appropriate agency personnel is to create a more efficient and effective process through which to issue permits for oil and gas activities to interested parties while ensuring that the Nation's energy resources are developed in an environmentally-responsible manner. As our Nation's energy needs continue to increase, the BLM is positioned to do its part in helping to meet that need.

Looking to the Future: The Alaska Natural Gas Pipeline

The BLM is continuing leasing, exploration and development activities in the National Petroleum Reserve-Alaska (NPR-A), an area covering more than 23 million acres in the northwest corner of the state. Development of these oil and gas resources is an important

component of the President's National Energy Policy. The first significant commercial production from the NPR-A is expected as early as 2008.

The BLM will also participate in the inter-agency activities relating to the siting of an Alaska Natural Gas Pipeline. On October 13, 2004, the President signed into law the Alaska Natural Gas Pipeline Act, (ANGPA), legislation that greatly enhances the prospects for approval of the Alaska Natural Gas Pipeline, which will provide enhanced access to the natural gas supplies on the North Slope of Alaska.

There are currently two Federal rights-of-way granted for an Alaskan gas pipeline: 1) the Alaska Natural Gas Transportation System (ANGTS) project, sponsored by Trans-Canada and issued in 1980; and 2) the Trans-Alaska Gas System (TAGS) project, sponsored by Yukon Pacific Corporation and issued in 1988. Other proposed projects include one sponsored by the North Slope Producers (Conoco Phillips, BP, and Exxon Mobil) and another proposed by the Alaska Gasline Port Authority referred to as the "All Alaska" project.

In order to meet the intent and provisions of the Alaska Natural Gas Pipeline Act, the Federal agencies with jurisdiction have been meeting regularly and are developing an interagency Memorandum of Understanding to define regulatory alignment.

The U.S. Geological Survey (USGS)

This statement would be incomplete without a discussion of the valuable role of USGS. The USGS provides impartial scientific information to advance the understanding of geologically based energy resources to contribute to plans for a secure energy future and to facilitate evaluation and use of resources. These resources include oil, gas, and coal as well as gas hydrates and geothermal.

The USGS has a clearly defined role: (1) to advance the understanding of processes affecting the formation, accumulation, occurrence, and alteration of geologically based energy resources; (2) to conduct scientifically robust assessments of onshore and state offshore U.S. energy resources (pre-development) and international energy resources; (3) to study environmental and human health effects associated with energy resource occurrence, production, and use. Because USGS is non-regulatory and does not have land or resource management responsibilities, USGS is often viewed as an unbiased provider of resource assessments as well as the geology and science underpinning the assessment. The resource assessment results provide impartial scientific information about energy resources and directly support the Department's mission of managing natural resources to promote responsible use and sustain a dynamic economy. Collectively, this information advances the scientific understanding of energy resources, contributes to plans for a balanced and secure energy future, and facilitates the strategic use and evaluation of resources.

The USGS, in its national assessment of undiscovered oil and gas resources onshore and beneath State waters, estimated a total of 622.22 trillion cubic feet (Tcf) of technically

recoverable undiscovered natural gas. This total represents the sum of mean estimates for natural gas in conventional accumulations (307.68 Tcf), in continuous accumulations that include shale gas and tight sandstones (246.97 Tcf), and in continuous accumulations in coalbeds (67.32 Tcf).

The bulk of undiscovered, conventional natural gas resources in the U.S. are located in northern Alaska and the onshore Gulf of Mexico. Most resources of continuous natural gas in shale and tight sandstones are located in Rocky Mountain basins and the Appalachian Basin. Coalbed natural gas resources are concentrated in the San Juan, Powder River, Appalachian, and Black Warrior Basins.

Current USGS Gas Hydrate Research Activities

USGS is recognized globally as a scientific leader in gas hydrate research. Gas hydrates represent a potentially huge energy resource; however, any real contributions to the world's energy supply will depend upon the availability, production feasibility, and cost of extracting methane from the hydrate phase. The overall size and production feasibility of hydrates at any one site are still very much in question. The USGS:

- continuing efforts to assess the recoverability and production characteristics of permafrost-associated natural gas hydrates in the Prudhoe Bay-Kuparuk River area, AK to examine the resource potential and possibly drill and test a viable gas-hydrate prospect. This cost-shared study between the Department of Energy (DOE) and USGS includes technical support and data access from industry and academic cooperators on the North Slope.

- working with BLM and the State of Alaska Department of Natural Resources to assess the resource potential of known and undiscovered gas hydrate and associated conventional gas accumulations on both Federal and State lands in northern Alaska.

- working with MMS to develop a new hydrate resource assessment methodology for offshore hydrates.

- working in partnership with the Directorate General of Hydrocarbons, Ministry of Petroleum and Natural Gas, Government of India to study, drill, and sample gas hydrates along the continental margin of India in order to meet long term goals of developing and implementing a more efficient means of exploiting Indian gas hydrate reserves.

- doing state-of-the-art research on the thermodynamics and geotechnical properties of gas hydrate in support of increasing our understanding of how these resources behave in both terrestrial and marine environments.

- working with the Joint Industry Project in the Gulf of Mexico, to use seismic information to predict and test the occurrence of gas hydrates.

USGS and the Energy Policy Act of 2005

Several key Energy Policy Act efforts are already underway within USGS. The USGS is conducting a national geothermal assessment. The USGS assessment work is utilizing new concepts of geothermal resources and new technologies for harnessing geothermal power. The USGS is continuing its oil and gas resource assessments underlying Federal lands (started with the Energy Policy and Conservation Act of 2000). The USGS is working with BLM and U.S. Forest Service (USFS) to conduct a national coal inventory. The USGS is conducting preparatory work for an anticipated start to a national oil shale assessment in FY 2007. While most of this work is not focused on natural gas, use of these resources in the energy mix of the country helps alleviate the need for natural gas to meet all of the electricity needs in the U.S.

Gas hydrate research activities at the USGS are being expanded, because this resource has the potential to make a contribution to the natural gas endowment of the country. Proposed work in FY 2007 will enable USGS to undertake a coordinated effort with BLM and MMS to provide: (1) additional studies in other hydrate-bearing areas of Federal jurisdiction (such as the Gulf of Mexico); (2) a growth in the data processed, interpreted, and made available for hydrate research; and (3) study of the properties of gas hydrates in a variety of geologic and climatic settings to determine those settings and properties of greatest advantage in making hydrates a viable energy resource.

The Office of the Assistant Secretary for Indian Affairs

The Office of Indian Energy and Economic Development within the Assistant Secretary for Indian Affairs' Office has been given the responsibility for promulgating and implementing the regulations for Tribal Energy Resource Agreements, as authorized under Title V of the Energy Policy Act of 2005. Use of these TERAs could provide significant flexibility for tribes that choose to develop their energy resources for economic purposes.

The economic potential of energy and mineral resources in Indian land is significant. The Division of Energy and Minerals Development (DEMD) within the Office of Indian Energy and Economic Development estimated that Indian lands hold the potential to produce over 5.3 billion barrels of oil[1] and 37.9 trillion cubic feet of natural gas.[2]

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[1]This is based on the DEMD's interpretation of U.S. Geological Survey (USGS), *Circular No. 1118,* "1995 National Assessment of United States Oil and Gas Resources." DEMD's assessment of Indian gas and oil resources was based largely on this study, which estimated undiscovered oil prior to 1995. Many technological breakthroughs have occurred in oil exploration and development since 1995. Therefore, DEMD supplemented the USGS estimates with a methodology that acknowledged new oil recovery techniques, such as in-fill and horizontal drilling.

[2] *Id.* In addition to this USGS estimate of undiscovered Indian natural gas, DEMD relied upon *Executive Summary – Assessment of Undiscovered Oil and Gas Resources of the Uinta-Piceance Province of Utah and Colorado*, USGS Uinta-Piceance Assessment Team, USGS Digital Data Series DDS-69-B, 2002; *Natural Gas Resources of the Greater Green River and Wind River Basins of Wyoming, Final Version* – February, 2003, U.S. Department of Energy, Office of Fossil Energy, National Energy Technology Laboratory; *Rocky Mountain Giants*, Colorado School of Mines, Department of Geology and Geological

These estimates of Indian oil and gas are based in part on the amount of oil and gas that the U.S. Geological Survey believes is *technically* recoverable from Indian lands.[3] Because much of Indian land has not seen the same extent of exploratory activity and data collection as adjacent Federal, State, or private land, some petroleum geologists believe that the resource estimates may, in fact, be understated. In addition, Indian Country holds another 53.7 billion tons of recoverable coal.[4]

Renewable energy resources are abundant also. For example, Indian Country encompasses some of the premier wind regimes in the U.S. and has the potential for generation of 535 billion kWh per year (total U.S. electric generation in 2004 was 3,853 billion kWh).[5]

Almost all Indian lands evidence some form of biomass energy potential, from woody biomass from forestlands and bio-diesel and ethanol production from agricultural and silviculture waste to the growing and use of energy crops. We have identified 118 reservations with a high potential for biomass production.

Tribes in Nevada, California, Oregon, North Dakota, and South Dakota, and pueblos in New Mexico also have potential to tap geothermal energy resources, while Indian lands in the Southwest and West present opportunities for solar energy development.

Hydrocarbon production in Indian Country has been significant and has much future potential. Nearly two million acres of Indian lands have already been leased for hydrocarbon energy production. These lands account for about 10% of the oil and natural gas production from federal onshore acreage. In 2004 (the last year for which figures are available), over $54 million in royalty revenues was reported for Indian oil

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Engineering, M. Ray Thomasson and Fred Meissner; and *1995 Assessment of United States Oil and Gas Resources – Results, Methodology, and Supporting Data*, USGS Digital Data Series DDS-30, Release Two, 1996.

[3] The USGS uses "play analysis" to estimate these volumes. A "play" is a set of discovered or undiscovered oil and gas accumulations that exhibit nearly identical geological characteristics. The utility of "play analysis" is that it correlates hydrocarbon accumulations to known geological features. The volumes derived are calculated from the percentage of each USGS oil and gas play occurring on Indian lands. Based on a probability model, the amounts were calculated for undiscovered oil and gas at a 50-percentile probability of recovery. Oil and gas units were reduced to "Barrels of Oil Equivalent," based on energy equivalence in BTUs, a standard industry practice.

[4] USGS *Professional Paper No. 1625* and additional calculations using proprietary information from the Office of Indian Energy and Economic Development. Increased coal supplies may quicken conversion of many electric power plants now fueled by natural gas, thus freeing up natural gas stores for other uses, including home heating. Over 90% of power plants built in the last five years are natural gas powered ("Natural Gas Facts," www.api.org). However, mine-mouth coal fired power plants on Indian lands could meet future electrical generation demands.

[5] *"Potential Wind Generation From Tribal Lands,"* National Renewable Energy Laboratory, U.S. Department of Energy (DOE). Wind blows in excess of 18 miles per hour across most of the Dakota, Montana, and Wyoming reservations (*World Watch*, "Falling Water, Rising Wind," Bob Gough, July/August, 2005).

production and over $200 million for Indian gas production.[6] As of 2000, these lands had produced a total of nearly 1.7 billion barrels of oil (valued at $15 billion) and 6,507,217,123 mcf of gas (valued at $8 billion).[7]

However, Indian Country has an additional 15 million acres of still *undeveloped* lands with hydrocarbon potential. These lands are located in sedimentary basins with a long history of hydrocarbon production. Moreover, conventional oil and gas exploration and development that has occurred on Indian lands has generally taken place at shallow to medium depths; millions of acres of such land are relatively under-explored for unconventional and deeper resources.

We have been actively providing technical assistance to various tribes by purchasing and interpreting thousands of miles of 2D seismic data as well as hundreds of square miles of 3D data. These studies have identified numerous prospects, some of which are essentially ready to drill. Some of the prospects still require additional data collection and evaluation to more accurately identify exploratory and development targets.

In addition, the Office of Indian Energy and Economic Development also provide loans and grants to tribes and individual Indians for economic development of their energy resources.

Conclusion

We expect a continuation of the unprecedented demand for energy and minerals leases and permits. Continued access to the environmentally reasonable development of natural gas resources on Federal lands and the OCS will help the nation meet its goals for secure and diverse energy sources. The Department plans to meet this demand by continuing to improve our internal processes, implementing provisions of the Energy Policy Act, and developing program innovations that improve effectiveness and reduce cost.

Thank you for the opportunity to testify today about the Departmental role in meeting America's demand for Natural Gas. We would be happy to answer any questions you have.

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[6] *"Reported Royalty Revenue for Fiscal Year 2004,"* Minerals Management Service, U.S. Department of the Interior.
[7] *Id.*.

Subcommittee on Tax, Finance, and Exports
Committee on Small Business, U.S. House of Representatives
June 28, 2006

Statement of Richard F. Goodstein
Washington Representative
Air Products and Chemicals, Inc.

Introduction

Chairman Bradley, Congresswoman Millender-McDonald, thank you very much for the opportunity to testify on the importance of natural gas to the development of hydrogen as a fuel of the future. I am the Washington Representative for Air Products and Chemicals, Inc., which, as a global industrial gases and chemicals manufacturer, is widely recognized as the world's leading generator of hydrogen. Air Products is a leading member of the National Hydrogen Association (NHA), and I am testifying thanks to the Committee's invitation to NHA.

Air Products has operations throughout the United States and abroad in over 30 countries. Air Products has testified many times before Congress on the subject of hydrogen, and is regularly a key participant in domestic and international conferences on hydrogen and the potential for hydrogen to be a major source of energy in the future. As the world's leading generator and seller of hydrogen, we look forward to sharing our considerable expertise in this area.

Summary

My testimony will make the following points:

- The framework for a hydrogen economy exists today; it is not merely a futuristic concept. Hydrogen is abundant, and hydrogen-fueled vehicles are on our streets already.
- Natural gas has been and is the leading feedstock for the production of hydrogen, and will continue to be as we phase in alternatives such as renewables, nuclear, and clean coal.
- While there are many reasons that lower natural gas prices would be healthy for the U.S. economy, for now high natural gas prices are not stifling the development of the hydrogen economy. The amount of natural gas used to produce hydrogen during the transition to a hydrogen economy will be immaterial to overall U.S. natural gas consumption.
- We share the concern of many others that high natural gas prices—and price volatility in particular—are a drag on the overall economy. For Air Products, we are concerned that high prices by historical standards will put our domestic customers at a competitive disadvantage in a global economy.
- Air Products has been a leading chemical manufacturer, and we have terminated significant chemical operations in the United States in response to global cost pressures magnified by high and volatile prices of natural gas in the United States.

Air Products: World Leader In Hydrogen

Air Products is the world leader in third-party hydrogen production and distribution of hydrogen, with approximately a 50% market share globally. Air Products safely operates sixty hydrogen production and processing facilities throughout the United States and the world, including Asia and Europe. Air Products is recognized as the industry leader in safety. The company maintains over 350 miles of hydrogen pipelines worldwide, and has been operating pipeline systems for over thirty-five years without a single recordable incident. Air Products alone has supplied liquid hydrogen to NASA to fill those large booster rockets for all space vehicle launches.

Air Products produces and delivers hydrogen through a variety of supply modes. The company operates hydrogen pipelines domestically in Texas, Louisiana, and southern California; delivers hydrogen—both liquid and gaseous—in tanker trucks throughout the country; and produces hydrogen on-site for application in oil refineries, chemical, steel, glass, pharmaceutical, and food plants, as well as for fueling vehicles. In short, Air Products is a fully-integrated supplier of hydrogen and also has unparalleled know-how in handling hydrogen safely.

Air Products has formed collaborations and alliances with the full range of automotive companies worldwide that are committed to developing hydrogen-fueled vehicles, whether fuel cell or internal combustion vehicles. Air Products also works closely with companies that manufacture fuel cells, and with oil and gas companies looking to dispense hydrogen fuel at their service stations. Air Products has developed over 40 hydrogen fueling stations throughout the world, predominantly in the U.S. (See attached photo of hydrogen dispensers.) The company works closely with the Department of Energy, with many state and local governments, and with a range of universities in research and development that are moving the country more rapidly down the path toward a hydrogen economy.

Role of Natural Gas in Generating Hydrogen

Most of the hydrogen supplied by Air Products is generated through a process of reforming natural gas in a setting that looks a lot like an oil refinery: natural gas coming in, almost pure hydrogen going out. (Attached to this testimony is a photo of a large steam-methane reformer.) Natural gas represents the most economical way for generating large volumes of hydrogen through the use of steam-methane reforming technology. Combined with the fact that hydrogen fuel cells are much more efficient than standard gasoline-powered internal combustion engines, hydrogen-powered vehicles ultimately will significantly reduce our consumption of oil.

Moreover, hydrogen generated from natural gas through steam-methane reformers need not increase carbon dioxide in the atmosphere. Large plants have the potential to facilitate the capture of carbon dioxide, a byproduct of hydrogen generation. Moreover, the only emission from a hydrogen-fuelled vehicle is water vapor. So long as carbon

dioxide is captured and sequestered, hydrogen ends up not contributing to air pollution or changes in the atmosphere.

Policy makers anticipate that renewable hydrogen—made not from natural gas but from a combination of renewable energy (e.g., solar, wind) and ready sources of hydrogen such as water—will ultimately drive the hydrogen economy, an economy in which stationary and mobile sources devices will be powered by hydrogen alone. Achieving a hydrogen economy, however, will take a number of major developments that reduce the cost of hydrogen production from renewable sources, hydrogen storage, and hydrogen fuel cells. Until then, natural gas will be the main source for hydrogen.

Why Embrace Hydrogen?

Those of us in the hydrogen world were very excited when President Bush heartily embraced the role of hydrogen in his State of the Union address in 2003. He vowed that the first car driven by a child born that year would be a hydrogen fuel cell vehicle. Such a strong endorsement of a hydrogen economy from the White House was very big news for Air Products, and for our "partners" who manufacture fuel cells and hydrogen-powered fuel cell cars as well as many in the petroleum industry.

The case for moving toward a hydrogen economy has been stated often in recent years, but it bears repeating. Nothing could be more important to the United States than energy security. To be free of the pricing power of the oil cartel would have tremendous value to the American economy. A hydrogen economy—especially once the hydrogen is produced from domestic, environmentally sustainable resources—will enable the United States to escape the stranglehold of the oil cartel.

Along with energy independence will come the savings from no longer having to maintain a defense posture predicated on massive oil importation. The hemorrhaging trade deficit would also be addressed in large part by eventually ending our dependence on foreign oil.

A hydrogen economy also provides a high degree of domestic security because it can be predicated on a system that delivers both electricity and hydrogen as fuel for vehicles. No one quite knows exactly how the hydrogen economy will develop, but there are likely to be several "right" answers to hydrogen production and delivery, depending on regional dynamics. One can imagine a series of regional hydrogen-generating facilities operating in hub-and-spoke networks. The natural gas lines that already exist in a city can be used to feed a hydrogen-generating plant. This plant, in turn, could be the starting point for the distribution of hydrogen within a metropolitan area. Such a system could free the United States from the fears of disasters, natural (consider the havoc wrought by Hurricane Katrina on our nation's energy supply) or man-made (such as a terrorist attack on the originating point of oil pipelines).

Of course, the environmental benefits from a hydrogen economy are significant too. No carbon dioxide is generated in the production of renewable or nuclear-derived

hydrogen, nor would any particulates be released into the air. A number of U.S. cities are currently experimenting with hydrogen-fueled buses to help them address urban air quality.

Current Role Of Hydrogen

A review of hydrogen production and its uses will help the committee understand its promise. Thanks to the Clean Air Act's requirement for cleaner burning gasoline, hydrogen—which removes sulfur from petroleum distillates such as gasoline and diesel—is generated at or near oil refineries nationwide. Hydrogen is thus widely available in the U.S. today. (See attached map.)

Hydrogen has many other industrial purposes. It is used in processes to make steel, glass, semiconductors, detergent, and an enormous variety of other products. For the most part, hydrogen is made by reforming natural gas. But a huge advantage of hydrogen is that it can be obtained from a wide variety of other energy sources, including oil, biomass, coal, and nuclear. As mentioned earlier, renewable sources such as solar and wind can generate the electricity to separate the hydrogen and oxygen atoms in water. Therefore, research and development into hydrogen should not be seen as taking away from alternative energy technologies, but instead as dovetailing perfectly with them.

Once generated, hydrogen can be distributed by pipeline, as a compressed gas in truck trailers, or as a cryogenic (super-cooled) liquid in tanker trucks, as well as by ship and by rail. Pipeline transportation of hydrogen as a high pressure gas is most economical, followed by trucking liquid hydrogen. Air Products is working on novel methods to reduce over the road transportation costs of cryogenic hydrogen and storage costs at the delivery site. Air Products is also pursuing a so-called Energy Park concept, which produces heat, power, and hydrogen from fuel cells. All are very exciting, and all are being demonstrated in the field, not just in a lab.

The hydrogen used in vehicles today typically is dispensed in a compressed gaseous form. One challenge for hydrogen is how to store enough hydrogen in a vehicle to provide the driving range that consumers demand. The Department of Energy and the private sector are working on this storage issue, and considerable strides have been made just within the past few years. Some auto companies have decided to utilize hydrogen in an internal combustion engine and store hydrogen onboard in cryogenic form. Municipal buses are turning to a mixture of compressed natural gas and hydrogen as their fuel. Others use hydrogen in fuel cells. Air Products works closely with all end users.

Contrary to popular perception, and especially with gasoline prices near all-time highs in real terms, the price of hydrogen as a fuel can be fairly competitive with gasoline. Air Products can furnish hydrogen from its hydrogen generating facilities in southern California at prices competitive to gasoline on an energy content basis.

High-profile use of hydrogen and fuel cells is not new. NASA incorporated fuel cells into its early spacecraft, and liquid hydrogen, furnished by Air Products, has been used in space launches since the inception of the space program. While most of the current

attention is on hydrogen to fuel vehicles, there is also a parallel effort to develop hydrogen fuel cells for everything from batteries for cell phones and laptops to backup power for hospitals and office buildings.

Small Impact on Natural Gas Supply

At current rates, it will be many years before utilization of hydrogen as a transportation fuel makes a dent in overall national consumption of natural gas. As shown on the attached map, hydrogen facilities exist in almost every state in the Union, and the hydrogen available there is largely made from natural gas. Fewer than 150 hydrogen-powered cars are currently deployed in the United States. (We urge you to take a test drive when they are on Capitol Hill or perhaps in your district.) It will be several years before hydrogen-powered cars number in the thousands, let alone in the millions.

Given the enormous amount of hydrogen generated for industrial purposes today, it will be at least a decade in the United States before hydrogen-fueled vehicles make a measurable impact on the amount of hydrogen generated overall. The Department of Energy has estimated that using natural gas to produce hydrogen during the transition period to a hydrogen economy—an economy that would include millions of hydrogen-powered vehicles and numerous stationary power sources dependent on hydrogen—would increase overall U.S. natural gas consumption by less than five percent.

To put in perspective the insignificance of hydrogen in natural gas demand today, consider the following: Air Products has fueled a majority of the hydrogen-powered vehicles in service in the United States, representing tens of thousands of fillings to date. In contrast, there are approximately 30-40 million fillings per day of gasoline or diesel in the United States.

Natural Gas Price Volatility Undercuts U.S. Manufacturing

Air Products is also a large specialty chemical manufacturer, and in that capacity it has been suffering with other chemical companies and large manufacturers from the high price and considerable volatility associated with natural gas supplies over the past several years. Such volatility is driving businesses out of the United States, and Air Products certainly has its own example. Air Products terminated methanol production at its chemical plant in Pensacola, Florida, and began importing from Trinidad based on the enormous reduction in the natural gas prices available in that Caribbean country. Hardly a chemical company in the United States today is not faced with almost exactly that same choice. Would the company have preferred to keep its plant and the associated jobs in the United States? Of course, but it could not have done so and remained globally competitive.

Worse, Air Products, as a major supplier of industrial gases to businesses large and small throughout the United States, fears that ongoing high and volatile prices of natural gas will severely damage industries throughout the United States, therefore costing companies like ours their domestic customer base.

Finally, the industrial gas business is very energy-intensive. The higher the price of natural gas is, the higher the price of energy generated by gas-fired utilities will be. High energy costs also hurt American firms competing against global firms not saddled by such expenses.

While natural gas prices have dipped recently—though still almost double historical levels—current and projected natural gas prices in the U.S. are well above those in Asia and many times those in the Middle East.

What Congress Can Do

Hydrogen from natural gas has great promise in addressing the nation's energy needs. It is not as futuristic as it seems. Hydrogen and fuel cell products are already on the market, auto makers are positioning to deploy larger fleets for consumer testing before the end of this decade, and the pace is accelerating.

Many Members of Congress have no qualms about supporting drilling for oil in Alaska, even though by most estimates American consumers will not use the first drop of that oil for more than ten years from whenever such development commences. Some of those same Members are uneasy about supporting hydrogen because it will not generate large dividends for the country in the near term. But the Department of Energy projects that hydrogen will be in a commercial phase by 2015-2020, and industry movement suggests a faster pace than that. We submit that anyone willing to wait on oil from Alaska should see hydrogen's potential in the same time frame.

Because hydrogen brings with it many societal benefits—such as independence from foreign oil and clean air—the federal government needs to work arm-in-arm with the private sector in advancing a hydrogen economy. That means the full array of government incentives—for example, tax preferences, loan guarantees, research and development spending, and the creation of appropriate codes and standards applicable to the development of a hydrogen-fueling infrastructure. Encouraging drilling for natural gas in an environmentally sensitive manner and in or near states that consent to such exploration is important to maintain the source of most hydrogen as we transition to more sustainable sources.

With appropriate government support, the United States can develop and maintain an edge over foreign competition in hydrogen and fuel cell technologies. These technologies will not only clean up the country, but also have the promise of being a major source of exports. The United States could hardly have a more important commitment than to become the recognized world leader in creating and exporting such important technologies.

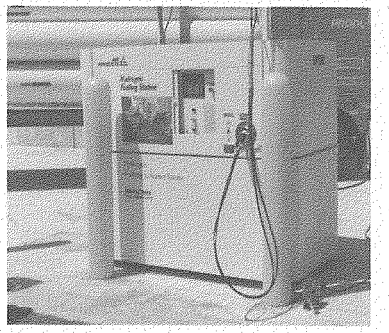
Conclusion

Natural gas will be the source of most hydrogen in the United States during the transition to a hydrogen economy based on sustainable sources of energy. It will be more

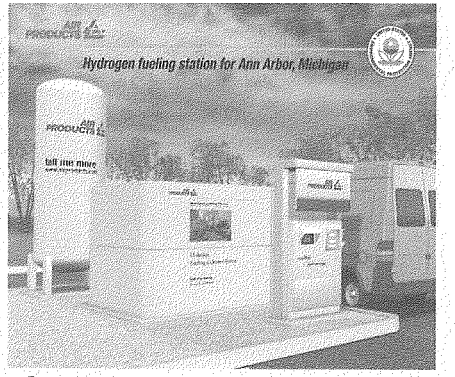
than a decade before the demand for hydrogen as a fuel appreciably increases natural gas consumption in the United States. Nevertheless, it is important to avoid the price volatility in natural gas that we have experienced in the United States in recent years, and the ability to access natural gas reserves in the United States is vital to the health of the American economy.

On behalf of Air Products, I thank you for the opportunity to share this perspective on hydrogen, its connection with natural gas, its current applications, and its promise for the future. Hydrogen as a transportation fuel is not some pie-in-the-sky concept. It has been shown to work, yet it needs the federal government's support to overcome the remaining technical hurdles and become widely integrated in society. We very much look forward to working with you, with the entire Committee, and with staff and all other stakeholders in achieving a reliable hydrogen economy as soon as possible.

H_2 Fueling Products



Series 100
Fueling System

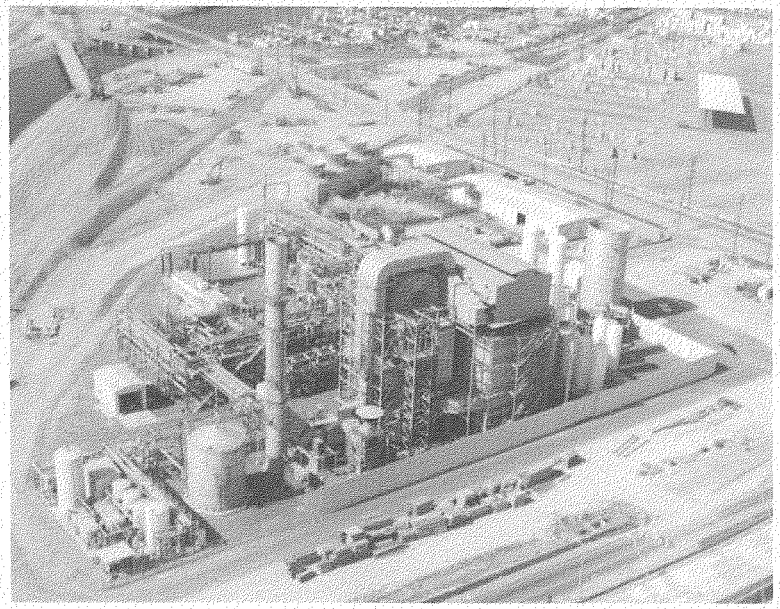


Series 200 Fueling Product

H2 Dispenser

Pipeline H_2 Fueling Station

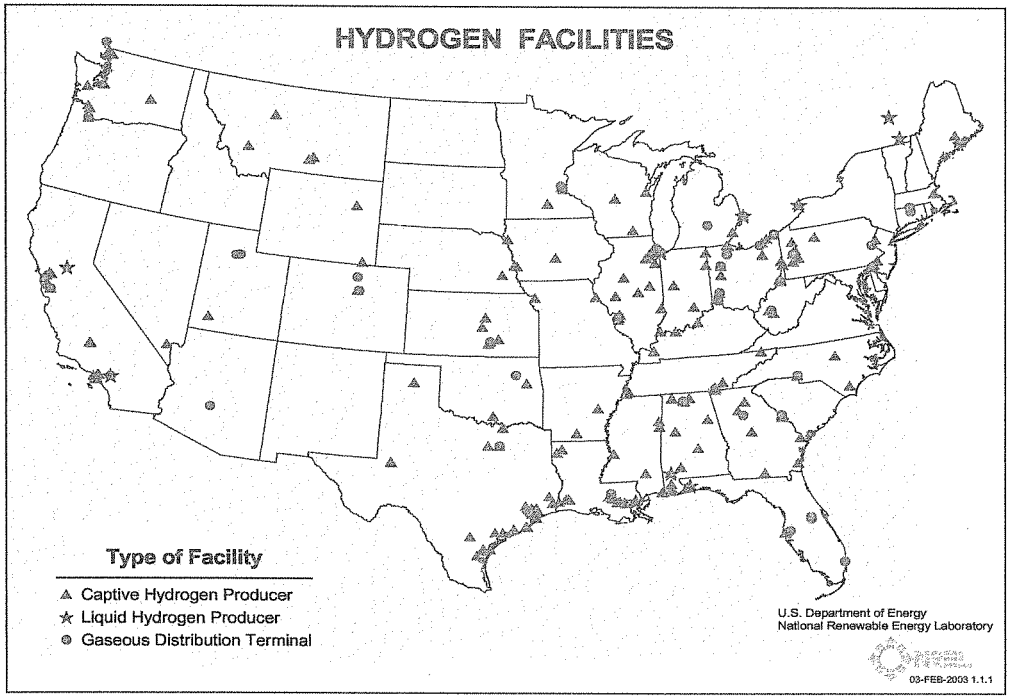
Hydrogen Production



Steam-methane reformer

Capacity: 100 Million SCFD of Hydrogen.
If Used for Automobiles Only this Plant Could Supply
~50,000 Fuelings/Day or
~400,000 Automobiles on Road

Current U.S. Hydrogen Infrastructure



JEFFREY D. UHLENBURG, PRESIDENT,
DONOVAN HEAT TREATING COMPANY, INC.
ON BEHALF OF THE
NATIONAL ASSOCIATION OF MANUFACTURERS

CONGRESSIONAL TESTIMONY
BEFORE THE SUBCOMMITTEE ON TAX, FINANCE AND EXPORTS
OF THE
HOUSE SMALL BUSINESS COMMITTEE
JUNE 27, 2006

On

The Effects of High Cost of Natural Gas on small businesses and future energy technologies.

My name is Jeff Uhlenburg, President of Donovan Heat Treating Company. We are commercial heat treaters with 15 employees located in Philadelphia, Pa. I am a member of the National Association of Manufacturers. The NAM is the largest broad-based industrial trade association in the country. Our members are in every industrial sector and every state.

I have been involved with energy issues for the company including natural gas purchasing for over 25 years.

Heat treating only requires three things: Metal, furnaces and heat.

It's the heat that I'm here to talk about with you today. The process generally takes 1-3 days in a modern plant.

Natural Gas is by far the most common fuel used in the heat treating industry today with 95 percent of the furnaces using gas. At DHT, we fire 5 furnaces with gas. Gas is the easiest, most consistent, most reliable fuel to use. That's why it's used so much in heat treating and many other industrial processes.

Natural gas is normally our second largest expense and has been since 2003.

Prices for gas have risen more than 600 percent since the late 1990s, from $2 per BTU to around $11 per BTU today. Even before last year's hurricanes, the price of gas had nearly doubled in 2005 alone.

Our plant in Pennsylvania was cut off from gas three times in the last five years. We slowed down, and ran as best we could with propane – our alternate fuel. The gas has started flowing again, but the disruption in supply and speculative bidding caused the price to nearly double to over $14.00. Our gas bill hit all time record highs in October and November of 2005.

How are we handling it?

We're continuing to run, for now, because we're obligated to finish jobs that our customers have started. We've announced a substantial price increase for January 1, so the price of heat treating is going up. We also expect sales to slow down soon and have tentatively planned to shut down half our production in January when we think that gas could be at its most expensive and may be in short supply. We'll alternate work crews, so nearly everyone will be laid off for a while.

That's our story. It's not much different from a lot of small manufacturers that I know. Our energy bills may be higher than theirs, but their cost pressures are just as real. Costs of manufacturing are already very high here in the U.S. and this kind of increase will push some over the edge. At our company, we're lucky that we have very little foreign competition -- it's expensive to ship bricks -- but I know as prices go up for brick & other materials, some people will be priced out of the market & fewer homes will be built.

You've already heard or will soon hear about other manufacturers moving off shore because of energy costs. I know you are hearing a lot from constituents about the high cost of gasoline. Since the current cost of natural gas is the equivalent of $7 gasoline, just wait till the heating bills come in!

So what happened to cause the pricing problem? It's easy to blame it on the hurricanes, but the problem goes much deeper. In my opinion, the natural gas shortage began about 5 years ago when electric utilities around the country quit building new generation except those units fired with natural gas. They did so with good reason. It was the easiest way to satisfy Clean Air regulations & environmental pressure from neighborhood activists. Why not take the easy road? But a gas fired generator uses an enormous amount of gas and at the same time that usage was going up, the oil & gas industry was constrained from drilling in the most promising areas of our country to find the needed supply increases. Without extra supply, it was inevitable that we would see prices going up. What the hurricanes did was take a dismal pricing situation, then multiply it by 2! The storms also pointed out the national folly of forcing most of our gas infrastructure through one area of the country.

So what do we need to do as a country? We didn't get into this hole overnight and we won't get out quickly either. At a recent NAM Board meeting, the consensus was that we really needed to develop our entire energy portfolio to take the pressure off natural gas.

Long term (20 to 25 years), we need to diversify our base load of electricity which should include increased construction of clean coal and nuclear power plants. This will help relieve the pressure on natural gas for manufacturing, home heating and peak power generation of electricity.

Our coal reserves are the world's largest – about equal to Saudi Arabia's oil reserves on a BTU-equivalent basis. We have a 250-year supply, with greater opportunities for coal use in transportation and industrial production on the near horizon.

There are new applications for coal as a transportation fuel as well. Coal-to-liquid technology, pioneered by Germany almost a century ago and perfected more recently in South Africa, offers the prospect of a new chapter in U.S. energy use.

Because of clean coal technologies, emissions from coal-fired utilities are 40 percent below the level in the 1980s. Carbon sequestration technology and gasification technologies to create hydrogen energy also offer exciting promise.

Additionally, we need more clean nuclear energy. Nuclear energy is a secure energy source that the nation can depend on. Unlike some other energy sources, it is not subject to unreliable weather or climate conditions, unpredictable cost fluctuations, or dependence on foreign suppliers. It produces no controlled air pollutants, such as sulfur and particulates, or greenhouse gases.

According to the Department of Energy, the demand for electricity is expected to grow by 50 percent by 2020. In order to continue producing at least one-third of our total electricity generation from emission-free sources, we must build 50,000 megawatts of new nuclear energy production.

Finally, renewable sources of energy hold exciting promise for the future, but much research and development needs to take place if the goal is to replace even a portion of the fossil fuel that we use. We are a fossil fuel based economy and in order to make that shift away from these fuels a significant government expenditure needs to take place to build an infrastructure. The NAM is not opposed to renewable fuels, but we believe that government policies should not mandate their use but encourage and provide incentives and allow the marketplace to work.

Intermediate term, we need to increase the supply of oil & gas. Extra supply will eventually bring down consumer prices. To increase supply, we need to:

Open up drilling in the Outer Continental Shelf & allow the states that permit offshore drilling to receive a large portion of the substantial revenue that comes with it Currently, 85 percent of all federally controlled coastal waters are off-limits to energy production due to federal moratoria that have blocked states' access to our reserves.

The OCS has over 420 trillion cubic feet of natural gas resources – enough natural gas to heat 100 million homes for 60 years, and enough oil to drive 85 million cars for 35 years.

Congress should lift federal restrictions that prevent states from developing these resources. Doing so would:

- Increase much-needed domestic energy supplies and reduce prices.
- Allow states to control their offshore energy resources.
- Allow coastal states to benefit from energy development by sharing royalties, resulting in hundreds of millions of dollars in local revenue.
- Encourage the building of a gas pipeline from Alaska
- **Short-term** there are only a few things that we can do:

- Allow companies like ours to have fast track environmental permitting to switch some more kilns or boilers to sawdust or coal, as long as we meet reasonable environmental standards for Hazardous Air Pollutants. Business can move quickly if the regulatory hurdles can be removed.
- Open additional LNG terminals as soon as possible.
- Finally, conservation and efficiency, which should be a part of any company's normal course of business because it makes good business sense, but the government's role should be to provide the mechanisms to encourage and educate manufacturers. We believe that the EPA's Energy Star program and the Department of Energy's Industrial Technologies Program are two such programs that provide the right mix of hands-on education and creative problem solving.

As I said earlier, we will not get out of this hole quickly or easily, but I believe that Congress holds the keys to long term energy independence and lower prices for oil & gas. Manufacturers cannot compete with electric utilities for natural gas. Most utilities have an automatic pass thru of higher fuel bills to their customers. Manufacturers that compete in a global economy don't have that luxury.

If we can't turn this situation around, the end result will be continued loss of good paying jobs in the US, lower tax receipts, and increased imports. I urge you to think long term and make good decisions for the entire country and this critical issue.

Thank you for the opportunity to present the NAM's and my company's view today.

House Committee on Small Business
Subcommittee on Tax, Finance and Exports
June 28, 2006
Statement of Paul Wilkinson
On Behalf of
The American Gas Association

Executive Summary

- Natural gas markets have been extremely tight for the past five years, with supply unable to keep pace with rising demand and prices reflecting the market situation. New supply initiatives are crucial to correcting this imbalance, as are demand side actions. Put in other terms, it is not good public policy to let weather dictate who heats their home, which businesses operate or shut down or who keeps or looses their job.

- The average commercial natural gas customer is paying more than twice as much for natural gas today as they did in 1999. Higher and more volatile prices will remain until we see significant relief in terms of new gas supplies. The strain of higher gas prices has forced many small businesses to close, resulting in increased unemployment.

- The domestic natural gas resource base is vast and diverse. AGA supports unlocking domestic sources of natural gas, both onshore and offshore. We believe natural gas can be produced in an efficient and environmentally responsible fashion, and that the increased availability of natural gas can help alleviate a number of environmental concerns, from acid rain and urban smog to water quality, solid waste disposal and climate change.

- Natural gas utilities, like their customers, do not benefit from higher natural gas prices. Local natural gas utilities make money on the delivery, not the production, of natural gas. Compensation for this delivery service is regulated at the state level. We support legislation and regulations to increase the supply of natural gas in order to moderate its price to consumers. Gas utilities want what their customers want – adequate supplies of natural gas at a reasonable price.

- Commercial natural gas customers have become increasingly efficient. In fact, the average commercial natural gas customer uses 25 percent less natural gas today than they did in 1980. Despite efficiency improvements, natural gas demand is projected to increase by 37 percent over the next 15 years. The demand for natural gas in the commercial sector is projected to increase from 3.3 quadrillion Btu per year to 3.9 quadrillion Btu per year.

- Domestic natural gas production accounts for over 80 percent of the natural gas supplied to consumers in the United States. Sustaining or growing gas production is a crucial part of meeting the energy needs of small businesses at a reasonable cost.

- New sources of gas supply must also be made available to natural gas consumers. In particular, supplies of liquefied natural gas from overseas and pipeline gas from Alaska must be aggressively pursued.

- Public policy makers must consider both energy and environmental goals when developing regulations that impact natural gas resource development. That is, environmental goals must be achieved in concert with the pursuit of a greater diversity in natural gas supply sources.

- Given that natural gas supplies are constrained, it is not wise to continue to rely on natural gas to provide 90 percent or more of our new electricity generation capacity. AGA supports efforts to diversify the electricity generation fuel mix.

Introduction

Thank you for the opportunity to testify before the subcommittee. My name is Paul Wilkinson and I am the Vice President of Policy Analysis at the American Gas Association (AGA). AGA represents 197 local energy utility companies that deliver natural gas to more than 56 million homes, small businesses and industries throughout the United States. Natural gas meets one-fourth of the United States' energy needs and it is the fastest growing major energy source. As a result, adequate supplies of competitively priced natural gas are of critical importance to AGA and its member companies. Similarly, ample supplies of reasonably priced natural gas are of critical importance to the millions of consumers that AGA members serve, particularly those residential consumers and small businesses that may have no other organized advocate.

The natural gas industry is at a critical crossroads. Natural gas prices were relatively low and very stable for most of the 1980s and 1990s. Wholesale natural gas prices during this period tended to fluctuate around $2 per million Btus (MMBtu). Today, however, natural gas markets are supply constrained and even small changes in weather, economic activity or world energy trends result in significant wholesale natural gas price fluctuations. Today our industry no longer enjoys prodigious supply; rather, it walks a supply tightrope, bringing with it unpleasant and undesirable economic and political consequences—most importantly high prices and higher price volatility. Both consequences strain natural gas customers—residential, commercial, industrial and electricity generators.

As this committee well knows, energy is the lifeblood of our economy. Millions of Americans rely upon natural gas to heat their homes, and high prices are a serious drain on their pocketbooks. Small businesses depend on natural gas for space heating, hot water, cooking, clothes drying, cooling and dehumidification, small-scale electricity generation and other applications. The impacts of high, volatile natural gas prices on U.S. industries – including plant closings and unemployment - are well documented. The impacts on small businesses may be less obvious but they are no less significant. Directly or indirectly, natural gas is critical to every American.

The consensus of forecasters is that natural gas demand will increase steadily over the next two decades. This demand growth will be driven by the electricity generation market, as natural gas has been the fuel of choice for over 90 percent of the new generation units constructed over roughly the past decade. In part, the dominance of natural gas in this market is attributable to environmental regulations that promote the clean-burning characteristics of natural gas. The overall growth in gas usage will occur because natural gas is the most environmentally friendly fossil fuel and is an economic, reliable, and homegrown source of energy. It is in the national interest that natural gas be available to serve the demands of the market. The federal government must address these issues and take prompt and appropriate steps to ensure that the nation has adequate supplies of natural gas at reasonable prices.

Natural Gas Market Conditions

Stability in the natural gas marketplace is crucial to all of America for a number of reasons. It is imperative that the natural gas industry and the government work together to take significant action in the very near term to ensure the continued economic growth, environmental protection, and national security of our nation. The tumultuous events in energy markets over the last several years serve to underscore the importance of adequate and reliable supplies of reasonably priced natural gas to consumers, to the economy, and to national security.

There has been a crescendo of public policy discussion with regard to natural gas markets since the "Perfect Storm" winter of 2000-2001, when tight supplies of natural gas collided with record cold weather to yield record natural gas bills. The vulnerability of the natural gas market to weather was demonstrated again in the summer of 2005 when weather that was 18 percent warmer than normal pushed more gas into electricity generators to meet air conditioning demand, and yet again in September when multiple hurricanes in the Gulf of Mexico eliminated nearly 25 percent of our total gas supply for a brief period, with lingering impacts even today. The hot summer pushed natural gas prices upward from the $6.00 per MMBtu level to nearly $10.00, the hurricanes resulted in prices that fluctuated between $12.00 and $14.00 per MMBtu, and a brief cold snap in December produced a price spike to roughly $15.00 per MMBtu. Only a substantially warmer than normal 2005-2006 winter heating season has dampened the impact of these price increases to consumers. Clearly, natural gas markets are higher and more volatile than at any point in history. Moreover, there is no sign that this market volatility will abate in the near future.

It is harmful to small businesses, individual families and to the entire U.S. economy for natural gas prices to remain both high and volatile. Unless we make the proper public policy choices—and quickly—we will face many more difficult years with regard to natural gas prices. Of course, when families pay hundreds of dollars more to heat their homes, they have hundreds of dollars less to spend on other things. Many families are forced to make difficult decisions between paying the gas bill, paying for medicines or paying the rent. There are, of course, state and federal programs such as LIHEAP to assist the most needy. But LIHEAP only provides assistance to about 15 percent of those who are eligible, and it does not provide assistance to the average working family. These price increases have affected all families – those on fixed incomes, the working poor, lower-income groups, those living day to day, and those living comfortably. We support the full funding of LIHEAP at the $5.1 billion level that is authorized in the Energy Policy Act.

The impact of unstable natural gas markets on U.S. businesses is equally disturbing. For example, since natural gas prices began rising in 2000, an estimated 78,000 jobs have been lost in the U.S. chemical industry, which is the nation's largest industrial consumer of natural gas, both for the generation of electricity at manufacturing plants and as a raw material for making medicine, plastics, fertilizer and other products used each day. Similarly, fertilizer plants, where natural gas can represent 80 percent of the cost structure, have closed one facility after another. Glass manufacturers, which also

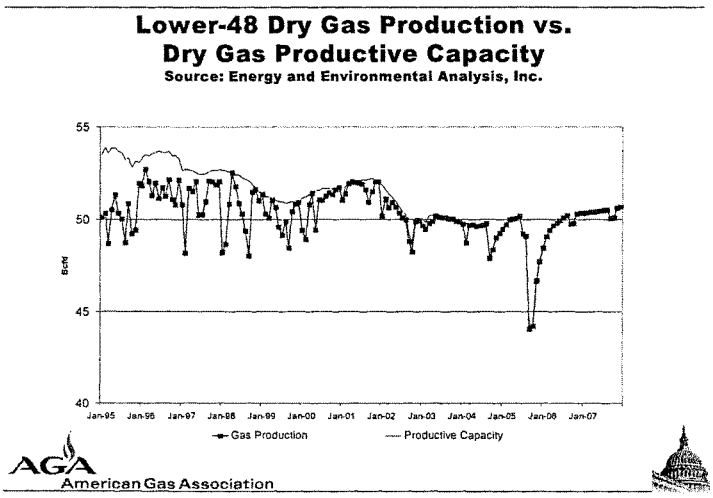
use large amounts of natural gas, have reported earnings falling by 50 percent as a result of natural gas prices. Documentation of the impacts of high natural gas prices on small businesses is less available, but anecdotal evidence provided by our member companies is clear – small businesses, where energy costs represent a high percentage of total costs and where capital is often limited, are struggling and in some cases they are being forced to close down. In our industrial and commercial sectors, competitiveness in world markets and jobs at home are on the line.

Natural Gas Demand Growth

In a study prepared for the American Gas Foundation in February of 2005, natural gas demand was projected to increase by 37 percent between 2003 and 2020 under a "most likely" energy scenario. Although higher natural gas prices may moderate some of this projected demand growth, including the growth in demand for gas-fired electricity generation, we believe the fundamentals of this document remain sound and the basic tenets are unchanged. The demand for natural gas in the commercial sector is projected to increase from 3.3 quadrillion Btu's in 2003 to 3.9 quadrillion Btu's in 2020. Natural gas provides roughly 40 percent of the energy consumed in the commercial sector.

Natural Gas Supply

For the past five years, natural gas production has operated full-tilt to meet consumer demand. The "surplus deliverability " or "gas bubble" of the late 1980s and 1990s is simply gone, as illustrated in the graphic below that compare actual natural gas production with production capability (prepared by Energy and Environmental Analysis).



Production facilities are operating at full capacity. No longer can new demand be met by simply opening the valve a few turns. The valves have been, and presently are, wide open.

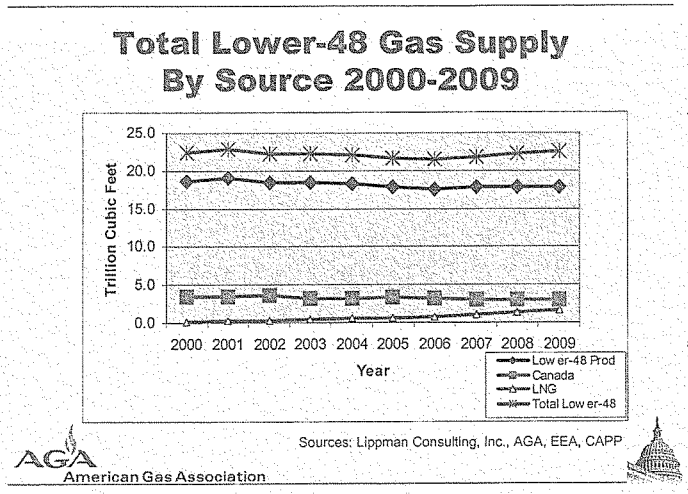
America has a large and diverse natural gas resource; producing it, however, can be a challenge. Providing the natural gas that the economy requires will necessitate making available for exploration and production the lands—particularly federal lands—where natural gas is already known to exist so gas can be produced on an economic and timely basis. Additionally, we must ensure that the new infrastructure that will be needed to serve the market is in place in a timely and economic fashion.

If we are to continue to meet the energy demands of America and its citizens, and if we are to meet the demands that will they make upon us in the next two decades, we must change course. It will not be enough to make a slight adjustment or to wait three or four more years to make necessary policy changes. Rather, we must change course entirely, and we must do it in the very near future. Lead times are long in the energy business, and meeting demand years down the road requires that we begin work today.

We have several reasonable and practical options. It is clear that continuing to do what we have been doing is simply not enough. In the longer term we have a number of options:

First, and most importantly, we must work to sustain and increase natural gas production by looking to new frontiers within the United States. Further growth in production from this resource base is jeopardized by limitations currently placed on access to it. For example, most of the gas resource base off the East and West Coasts of the U.S. and the Eastern Gulf of Mexico is currently closed to any exploration and production activity. Moreover, access to large portions of the Rocky Mountains is severely restricted. The potential for increased production of natural gas is severely constrained as long as these restrictions remain in place.

The graphic below shows how important sustaining domestic natural gas production is to supplying consumers with the natural gas they require. Even with natural gas imports from our North American neighbor, Canada, and even with increases in liquefied natural gas imports from other parts of the world, domestic production remains the preeminent source of natural gas to consumers and cannot be ignored.



To be direct, America is not running out of natural gas and it is not running out of places to look for natural gas. America is running out of places where we are *allowed* to look for gas. The truth that must be confronted now is that, as a matter of policy, this country has chosen *not* to develop much of its natural gas resource base. We doubt that that many of the millions of American households that depend on natural gas for heat are aware that this choice has been made on their behalf.

It is imperative that energy needs be balanced with environmental impacts and that this evaluation be complete and up-to-date. There is no doubt that growing usage of natural gas harmonizes both objectives. Finding and producing natural gas is accomplished today through sophisticated technologies and methodologies that are cleaner, more efficient, and much more environmentally sound.

Second, we need to increase our focus on non-traditional sources, such as liquefied natural gas (LNG). Reliance upon LNG has been modest to date, but it is clear that increases will be necessary to meet growing market demand. Today, roughly 97 percent of U.S. gas supply comes from traditional land-based and offshore supply areas in North America. Despite this fact, during the next two decades, non-traditional supply sources such as LNG will likely account for a significantly larger share of the supply mix. LNG has become increasingly economic. It is a commonly used worldwide technology that allows natural gas produced in one part of the world to be liquefied through a chilling process, transported via tanker, and then re-gasified and injected into the pipeline system of the receiving country. Although LNG currently supplies less than 3 percent of the gas consumed in the U.S., it represents 100 percent of the gas consumed in Japan.

LNG has proven to be safe, economical and consistent with environmental quality. Due to constraints on other forms of gas supply and increasingly favorable LNG economics, LNG is likely to be a more significant contributor to US gas markets in the future. It will certainly not be as large a contributor as imported oil (nearly 60 percent of US oil consumption), but it could account for 15-20 percent of domestic gas consumption 15-20 years from now if pursued aggressively and if impediments are reduced.

It is unlikely that LNG can solve the entirety of our problem. A score of new LNG import terminals have been proposed, some with capacities in excess of 2.5 billion cubic feet per day. However, given the intense "not on our beach" opposition to siting new LNG terminals, a major supply impact from LNG may be a tall order indeed.

Third, we must tap the huge potential of Alaska. Alaska is estimated to contain more than 250 trillion cubic feet of natural gas—enough by itself to satisfy US gas demand for more than a decade. Authorizations were granted 25 years ago to move gas from the North Slope to the Lower-48, yet no gas is flowing today nor is any transportation system under construction. Indeed, every day the North Slope produces approximately 8 billion cubic feet of natural gas that is re-injected because it has no way to market. Alaskan gas has the potential to be the single largest source of price and price volatility relief for US gas consumers. Deliveries from the North Slope would not only put downward pressure on gas prices, but they would also spur the development of other gas sources in the state as well as in northern Canada.

Fourth, we can look to our neighbors to the north. Canadian gas supply has grown dramatically over the last decade in terms of the portion of the U.S. market that it has captured. At present, Canada supplies approximately 14 percent of the United States' needs. We should continue to rely upon Canadian gas, but it may not be realistic to expect the U.S. market share for Canadian gas to continue to grow as it has in the past or to rely upon Canadian new frontier gas to meet the bulk of the increased demand that lays ahead for the United States.

The pipelines under consideration today from the Prudhoe Bay area of Alaska and the Mackenzie Delta area of Canada are at least 5-10 years from reality. They are certainly facilities that will be necessary to broaden our national gas supply portfolio. We must recognize, however, that together they might eventually deliver up to 8 billion cubic feet per day to the lower 48 States. That is less than 10 percent of the natural gas envisioned for the 2025 market.

There is much talk today of the need for LNG, Alaskan gas, and Canadian gas. There is no question that we need to pursue those supplies to meet both our current and future needs. Nonetheless, it is equally clear that, in order to meet the needs of the continental United States, we will need to continue to look to the lower-48 states.

Fifth, we must continue to develop and implement technologies and practices that allow us to use natural gas more efficiently. It should be noted that the average commercial natural gas customer uses about 25 percent less natural gas per year today than in 1980. This decline is attributable to better equipment for space and water heating,

tighter buildings and the implementation of various conservation measures. Research and development related to commercial sector energy efficiency, as well as technology deployment, must continue and expand.

Thank you for this opportunity to present our views.

Testimony of Lowell Ungar, Senior Policy Analyst
Alliance to Save Energy

House Small Business Committee, Subcommittee on Tax, Finance, and Exports
June 28, 2006

Natural Gas Price Impacts and Energy Efficiency Opportunities for Small Businesses

Introduction

The Alliance to Save Energy is a bipartisan, nonprofit coalition of more than 100 business, government, environmental and consumer leaders. The Alliance's mission is to promote energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. The Alliance, founded in 1977 by Senators Charles Percy and Hubert Humphrey, currently enjoys the leadership of Senator Mark Pryor as Chairman; Washington Gas Chairman and CEO James DeGraffenreidt, Jr. as Co-Chairman; and Representatives Ralph Hall, Zach Wamp and Ed Markey, along with Senators Jeff Bingaman, Byron Dorgan, Susan Collins, and Jim Jeffords, as its Vice-Chairs. Attached to this testimony are lists of the Alliance's Board of Directors and its Associate members.

The Alliance is pleased to testify today on what can be done about the impact of natural gas prices on small business. We believe that energy efficiency is the quickest, cheapest, and cleanest way both to help small businesses manage natural gas prices and to help bring those prices under control.

Energy Efficiency Is Key to Addressing Natural Gas Issues

Last year wholesale natural gas prices reached more than five times typical prices in the 1990s, and retail gas prices for businesses remain almost double their levels in 2002. All told, recent energy price increases, including natural gas, cost American families and businesses over $300 billion last year. These high prices have caused plant closings and loss of manufacturing jobs, and have made many low-income homeowners unable to pay their heating bills. The problems are not likely to go away. The Energy Information Administration last year revised its long-term projections of natural gas prices upward, and now predicts they will stay near recent levels for the next 25 years.

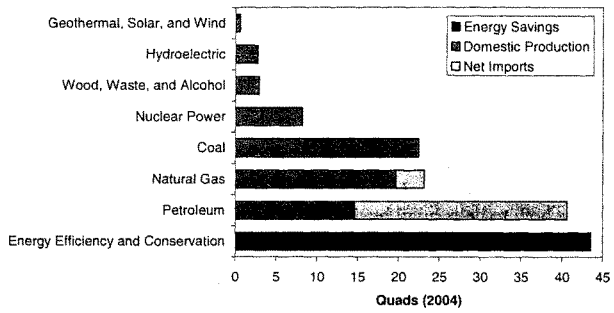
The high prices are in large part because demand has outstripped limited production. U.S. production of natural gas is lower now than in the early 1970s and—despite the sky-high prices—lower than in the early part of this decade. Meanwhile use of natural gas to generate electric power has shot up, as most new electric plants run on natural gas.

The gap between lower production and rising demand has been filled in two ways. Natural gas imports are rising, in many cases from the same unstable regions of the world from which we import oil. Thus, while doing little about the security implications of our growing dependence on foreign oil, we are adding a similar dependence on foreign natural gas.

More importantly, energy efficiency has helped keep direct natural gas use by homes and businesses relatively flat for the past three decades. Even though our economy is two and a half times as large as in 1973, the use of natural gas for residential and commercial buildings has barely risen, and industrial gas use has declined.

Whether for natural gas, oil, or electricity, energy efficiency can slow or reverse the growth in energy demand, and thus moderate the associated price volatility, energy security concerns, and environmental impacts. Energy efficiency is the nation's greatest energy resource—we now save more energy each year from energy efficiency than we get from any single energy source, including oil, natural gas, coal, and nuclear power. The Alliance to Save Energy estimates that if we tried to run today's economy without the energy-efficiency improvements that have taken place since 1973, we would need 43 percent more energy supplies than we use now. Much of these savings result from federal energy policies and programs like appliance and motor vehicle standards, research and development, and the Energy Star program. Had we not achieved these energy savings, our natural gas supply shortage and the energy challenge facing small businesses would be much worse.

Energy Efficiency: America's Greatest Energy Resource



Source: Alliance to Save Energy

And tremendous, cost-effective, potential energy savings remain. A 2000 study by several of the national labs found that overall the United States could save 19 percent of anticipated energy use by 2020, essentially halting growth in consumption. This includes 12 percent savings for natural gas as well as 21 percent savings for petroleum, and 24 percent savings for electricity. The National Petroleum Council concluded in 2003 that supply from traditional North American production will not be able to meet projected natural gas demand, and that "greater energy efficiency and conservation are vital near-term and long-term mechanisms for moderating price levels and reducing volatility." And a recent analysis by the American Council for an Energy-Efficient Economy found that just a small reduction in natural gas use over the next few years could reduce wholesale natural gas prices by as much as one quarter—because natural gas supplies are so tight, the potential impact of energy efficiency is magnified.

Policies to Save Natural Gas and Help Small Businesses

The Alliance would like to highlight four energy-efficiency measures that can reduce natural gas use and help small businesses: tax incentives, funding for federal programs, support for utility

energy-efficiency programs, and energy standards for appliances and buildings. Many of the proposals reduce electricity use in addition to direct natural gas use; since most of the increased electricity generation is from natural gas, and most of the increased gas demand is for electricity, often the best way to save natural gas is to save electricity.

Energy-Efficiency Tax Incentives

The Energy Policy Act of 2005 included an important set of tax incentives for highly efficient commercial buildings, new homes, home improvements, heating and cooling equipment, and appliances. These incentives have great potential to transform markets for energy-efficient technologies and thus save natural gas. The American Council for an Energy-Efficient Economy estimates that over the 2006-2020 period, these tax incentives can reduce U.S. natural gas use by 1.6 trillion cubic feet, reduce peak electric demand by more than 6,000 MW (equivalent to 20 power plants of 300 MW each), reduce consumer energy bills by $20 billion, and prevent more than 40 million metric tons of carbon emissions. These incentives may be especially important for small businesses, including home builders who can receive credit for building new homes, contractors and retailers who can leverage the customer tax incentives for home improvements into increased business, and businesses who can receive credit for making their own commercial buildings more efficient.

However, these incentives are in effect for too short a time, ending in 2007. This period may be too short to cause lasting change in some markets. The public education, ramp-up in production, development of distribution channels, and other changes needed to increase availability and lower prices of efficient products so they can achieve widespread use may take more than two years. For new buildings the time constraints are even worse. A large commercial building initiated when the bill was signed last August will not be finished before the commercial buildings deduction expires in December, 2007. New homes builders face similar difficulties in learning new technologies and techniques, changing their designs, getting permits, and building and selling homes in new developments in two years. The effective period also is being shortened by the failure of the Treasury Department to issue needed rules quickly. The first partial guidance on the commercial buildings incentive was only issued this month.

The Alliance strongly supports extending the incentives as soon as possible with some modifications that have been worked out with other stakeholders—notably a performance-based incentive for whole-home energy-efficiency retrofits that picks up where the current home improvements credit leaves off. We also recommend an additional tax credit to help home energy raters and analysts develop their small businesses to become energy-efficiency resources for homeowners and businesses, including those seeking the tax incentives. A tax credit for efficient combined heat and power systems that was left out of the final energy bill also would help owners of commercial buildings and industrial plants save more energy.

Funding for Federal Programs

Several effective federal programs help mitigate high energy prices and help small businesses cope with those prices by helping small businesses be more energy-efficient. More funding for these programs would be one of the quickest and most effective ways of addressing the natural gas situation, but most of them have faced budget cuts. Just two of them are described here.

Energy Star is a successful voluntary deployment program at the Environmental Protection Agency and the Department of Energy (DOE) that has made it easy for businesses and consumers to find and buy many energy-efficient products. Energy Star works with thousands of small businesses across the country to encourage sales of energy-efficient products, and helps many more businesses reduce their own energy use. In 2004 alone, Energy Star helped Americans save enough energy to power 25 million homes and avoid greenhouse gas emissions equivalent to those from 20 million cars – all while saving $10 billion on their utility bills. Every federal dollar spent on the Energy Star program results in an average savings of more than $75 in consumer energy bills and the reduction of about 3.7 tons of carbon dioxide emissions. With additional funding, the Energy Star program could update its criteria, label additional products, and provide Americans with more information on how to save energy. The House restored FY 2007 funding for the program just to last year's level.

Industrial Assessment Centers (IACs) are one of the most effective DOE industrial programs. University-based IACs train university students to conduct plant-wide energy assessments, and use the students to help small and medium-sized businesses save money by reducing their energy use. They thus develop a workforce of skilled energy managers, have an immediate impact on energy use, and help small businesses cut energy costs. Nonetheless, the administration has proposed to cut IAC by 30 percent (even while it touts its similar work with the largest industrial plants).

Other federal programs help small businesses develop innovative energy-efficient technologies, bring those technologies to market, incorporate those technologies in buildings, and educate their customers—including other businesses—about energy-saving opportunities. Yet the administration has proposed to cut energy-efficiency programs at DOE's Energy Efficiency and Renewable Energy Office by almost one-fifth. The programs would be cut by a third after inflation since 2002, even as energy prices have soared. We need to do better.

Energy Efficiency Resource Standard

Over the last two decades, states worked with regulated utilities using demand-side management (DSM) programs to avoid the need for about one hundred 300-Megawatt (MW) power plants. Many utilities have found that helping their customers to save a kilowatt-hour of electricity or a therm of natural gas is cheaper than producing and delivering that energy. While estimates vary widely, utility end-use energy-efficiency programs often cost around 3-4 cents per kilowatt-hour. Small businesses benefit from the energy expertise of utilities through these programs. However, utility spending on DSM programs nationwide was cut almost in half as the electricity industry was partially deregulated in the late 1990's. More recently, interest in similar natural gas programs has grown along with natural gas prices.

Several states are developing innovative policies to set performance standards for utility energy-efficiency programs, analogous to (and sometimes combined with) standards for generation from renewable sources.

- Texas requires retail electric providers to meet 10 percent of the anticipated increase in peak electric demand through efficiency programs,

- Connecticut requires electricity output from new combined heat and power systems and the electricity savings from new conservation and load management programs in commercial and industrial facilities to account for one percent of all electricity use each year,
- Pennsylvania, Hawaii, and Nevada have combined standards for efficiency and renewable or other alternative energy resources, and
- California has a "loading order" that sets efficiency as the preferred resource; only once cost-effective efficiency measures have been exhausted are natural gas and electric utilities to use renewable and then traditional sources.

Like a renewable portfolio standard, an energy efficiency resource standard is a performance-based approach that gives utilities broad flexibility about how and where to achieve the energy savings. Utilities are required to implement energy-efficiency programs sufficient to save a specified amount of energy, such as one percent of the previous year's sales. They can implement their own programs, hire energy service companies or other contractors, or sometimes pay other utilities to achieve the savings by buying credits. Usually, the costs of the energy-efficiency programs must be recovered from energy customers through utility rates, but the savings from avoided energy supply are greater than the efficiency cost. Note that an energy efficiency resource standard is not a requirement that the utility's sales decrease in absolute terms or a limit on their sales at all; it is a requirement that utilities implement programs that are estimated to save a specified amount of energy.

As a focus for federal policy, the energy efficiency resource standard has several advantages:

- It is readily available in all parts of the nation,
- It is available for direct natural gas use as well as for electricity,
- It is cost-effective today, and
- The potential savings are enormous—if 0.75 percent savings were achieved annually nationwide, by 2020 natural gas and electricity use would be reduced by 8 percent, with an estimated net cumulative savings to consumers of $64 billion.

Appliance and Building Standards

Perhaps the only other federal policy to achieve that level of natural gas and electricity savings is appliance standards. While EPAct 2005 included a set of important new standards, additional action by Congress is needed. First, the greatest potential natural gas savings are from a standard requiring efficient residential furnaces in the Northern states, but these furnaces may not be cost-effective in all of the warmer states. Legislation would be useful to clarify that the Department of Energy, if warranted, could set separate levels for heating and cooling equipment in two climate regions. Second, the Alliance is working with manufacturers and other stakeholders to reach agreement on proposed federal standards for additional categories of equipment, and hopes these standards will be legislated as agreement is reached. Finally, the Department of Energy remains years behind in issuing important and legally required energy standards. The Alliance urges Congress to maintain vigilant oversight as DOE attempts to meet the requirements for new rulemakings in EPAct 2005 while issuing the long-delayed standards required in earlier bills.

Building energy codes also are very important for saving natural gas. Building codes are usually set at a state or even local level. However the federal government has two important roles. The

states, and organizations that set national model codes, rely on the federal government for technical and financial assistance in order to update the codes and encourage compliance. Yet the administration has proposed to zero out the Building Codes Training and Assistance program at DOE that provides the necessary assistance to states. Second, the federal government sets standards for certain buildings that are not amenable to state regulation or that receive federal funding. Yet the federal standards are very out-of-date. The Alliance supports updates to federal standards for manufactured housing and homes with federally subsidized mortgages, as well as housing constructed or reconstructed with disaster relief and privatized military housing.

Conclusion

Consumers and businesses in this country have been hit by the worst energy price shocks in many years for natural gas, as well as gasoline, and (in some areas) electricity. These price increases hit the rest of the economy, as chemical plants move overseas and, according to polls, about half of American households cut back on other household spending. Improved energy efficiency is the best near-term strategy to begin balancing demand and supply and bring energy prices down, and is a key component of a long-term energy strategy. If Congress does not act, the price volatility and supply shortages will continue to plague us. The Alliance urges you to seize the opportunity now, due to the high prices, to enact significant energy-efficiency measures that will benefit small businesses, the rest of the economy, the environment, and energy security for years to come.

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